The use of stems in the selection of International Nonproprietary Names (INN) for pharmaceutical substances

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PREFACE

The document "The Use of Common Stems in the Selection of INNs" is intended primarily for persons and companies applying to the WHO INN Programme for the selection of an INN for a new pharmaceutical substance and has been designed to assist in the process of devising a suitable proposal. It will also be of assistance to institutions and specialists involved in the review of proposed INNs, including drug regulatory authorities, pharmaceutical manufacturers, patent offices and trade mark officers as well as for scientists, teachers, health professionals and other persons interested generally in drug nomenclature. The document is composed of four main parts and annexes.

Part I "Introduction" describes the WHO INN Programme, INN selection procedure, and criteria for name selection and gives general information on the INN stem system.

Part II contains the list of all INN stems. It is composed of two indexes, one entitled "Alphabetical List of Common Stems" which presents the list of stems, and another entitled "Alphabetical List of Common Stems and their definitions" which includes a definition for each stem.

Part III presents the stem classification system used by the INN Programme to categorize the main activity of pharmaceutical substances. Each category included in the list is given an appropriate code consisting of a capital letter and three digits. When INNs for substances belonging to a given category include a specific stem, appropriate information is included in the table.

Part IV of the document entitled "Alphabetical List of Stems Together With Corresponding INNs" serves as a listing of all proposed INNs (published in lists 1 - 109) containing INN stems. The list is organized in alphabetical order (as set out in Part II) and includes all INNs containing individual stems. In addition, under each stem heading information is given on INNs in which the preferred stem has been used but not in accordance with its definition as well as on INNs which belong to the same group of pharmaceutical substances but in which no preferred stem has been used. To facilitate the use of Part IV, the lay-out of information is presented as a diagram on page 6 and is complemented by additional information given at the end of part I "Introduction".

Six annexes attached to the document are intended to be of assistance to users. Annex 1 reproduces the Procedure for the Selection of Recommended International Nonproprietary Names for Pharmaceutical Substances as approved by the WHO Executive Board in its resolution EB15.R7 as amended by resolution EB115.R4. Annex 2 reproduces General Principles for Guidance in Devising International Nonproprietary Names for Pharmaceutical Substances as approved by the WHO Executive Board in the above-mentioned resolution, as amended. Annex 3 explains the nomenclature scheme for monoclonal antibodies. Annex 4 explains the nomenclature scheme for Gene Therapy Products. Annex 5 gives reference to the volumes of the WHO Drug Information in which proposed lists of INNs have been published. Annex 6 "Why INN?" gives general information on the present situation of WHO INN Programme and its achievements.
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PART I

INTRODUCTION

WHO'S INN PROGRAMME
The World Health Organization (WHO) has a constitutional responsibility to "develop, establish and promote international standards with respect to biological, pharmaceutical and similar products". The International Nonproprietary Names (INN) Programme is a core activity embedded in the normative functions of WHO and has served the global public health and medicines community for over fifty years. The Programme was established to assign nonproprietary names to pharmaceutical substances so that each substance would be recognized by a unique name. Such names are needed for the clear identification, safe prescription and dispensing of medicines, and for communication and exchange of information among health professionals. INNs can be used freely because they are in the public domain. In addition to being a basic component of many WHO medicines activities and programmes, INNs are used in regulatory and administrative processes in many countries. They are also intended for use in pharmacopoeias, labelling, and product information and to provide standardized terminology for the international exchange of scientific information.

INN SELECTION PROCEDURE
Each name proposed for designation as an INN is examined and selected in accordance with a formal procedure. Requests for INNs can be submitted directly to WHO (application forms online at http://www.who.int/medicines/services/inn/en/index.html). In some countries where national nomenclature commissions exist, applications may also be made through the national nomenclature authority.

Members of the WHO Expert Panel on the International Pharmacopoeia and Pharmaceutical Preparations (or other Panel as appropriate) are officially designated to select nonproprietary names. Based on the information provided, an agreed name is selected and published as a proposed INN. During a four month period, any person can make comments or lodge a formal objection to the proposed name. If no objection is raised, this agreed name is published as the recommended INN.

In 1993, the World Health Assembly endorsed resolution WHA46.19 which states that trademarks should not be derived from INNs and INN stems should not be used in trade marks. The Assembly reasoned that such practice could frustrate the rational selection of INNs and ultimately compromise the safety of patients by promoting confusion in drug nomenclature. Above all, INNs are protected for use in the public domain.

CRITERIA FOR SELECTION
International Nonproprietary Names (INN) should be distinctive in sound and spelling. They should not be inconveniently long and not be liable to confusion with names in common use. Information on the selection procedure and general criteria in devising INNs is set out in Annexes 1 and 2.

INN STEMS
Stems define the pharmacologically related group to which the INN belongs. The present document describes stem use procedure and includes, in Parts II and IV, the list of common stems for which chemical and/or pharmacological categories have been established. These stems and their definitions have been selected by WHO experts and are used when selecting new international nonproprietary names. Because the nomenclature process is on-going and constantly under revision, definitions of older stems are modified as and when newer information becomes available.

Whenever possible, an INN should include the "common stem" expressing the pharmacologically-related group to which the substance belongs. Names that are likely to convey an anatomical, physiological, pathological or therapeutic suggestion are avoided.
In addition, certain rules have been established in devising INNs to facilitate their use internationally. For example, to make pronunciation possible in various languages, the letters "h" and "k" should be avoided; "e" should be used instead of "ae" and "oe", "i" instead of "y", "t" instead of "th" and "f" instead of "ph".

**INFORMATION ON USING PART IV "ALPHABETICAL LIST OF STEMS TOGETHER WITH CORRESPONDING INNs"

The following information complements or describes the diagram set out on page 6.

1. The list includes INNs published in *Proposed International Nonproprietary Names Lists 1 - 109* categorized according to the list of stems (see Annex 5).

For each stem, INNs have been classified as:

(a) INNs in which the preferred stem has been used in accordance with its definition;

(b) INNs in which the preferred stem has been used, but not in accordance with its definition;

(c) INNs which belong to the same group of pharmaceutical substances but in which the preferred stem has not been used. (This part of the list is not exhaustive).

2. References to nationally used syllables published in the British Approved Names (BAN) Dictionary and the USP Dictionary of USAN and International Drug Names have also been made wherever applicable. Whenever the BAN or USAN definitions are not identical to the INN definition they are set out in brackets under the INN definition.

3. The codes presented on the diagram as Stem Classification refer to the stem classification system used by the INN Programme described in Part III of the document.

4. Symbol (x) indicates stems included as examples in Article 9 of the "General Principles for Guidance in Devising International Nonproprietary Names for Pharmaceutical Substances" (see Annex 2).

5. Symbol (d) indicates stems that were formerly used, but are no longer formally acknowledged by the INN Programme.
Layout of information

Stem classification

Stem definition

National Name(s)

INN - The use of stems

Calci

Vitamin D analogues/derivatives

USAN

Graphic Formula

INN (English)

List of proposed INN

Names in which the preferred stem has been used in accordance with its definition

Names in which the preferred stem has been used but not in accordance with its definition

Names which belong to the same group of pharmaceutical substances and in which no preferred stem has been used (this part of the list is not exhaustive)

(a) alfacalcidol (40), calcifediol (26), calcipotriol (61), calcitriol (39), colecalciferol (13), doxercalciferol (82), ergocalciferol (13), falecalcitriol (74), lexacalcitol (71), maxacalcitol (75), paricalcitol (78), secalciferol (62), seocalcitol (78), tacalcitol (65)

(b) calcitonin (31) (polypeptide)

c) dihydrotachysterol (1)

Names which belong to the same group of pharmaceutical substances and in which no preferred stem has been used (this part of the list is not exhaustive)

(x) stems that are included in article 9 of the General Principles

(d) stems that were formerly used, but are no longer formally acknowledged by the INN Programme.
Part II A

ALPHABETICAL LIST OF COMMON STEM S

A
-abine (see -arabine and -citabine)
-ac
-acetam (see -racetam)
-actide
-adol/-adol-
-adom
-afenone
-afil
-aj-
al
-aldrate
-alol (see -olol)
-alox (see -ox)
-amivir (see vir)
-ampanel
and
-anib
-anide
-anserin
-antel
-antrone
-apine (see -pine)
-(ar)abine
-arit
-arol
-arone
-arotene
arte-
-ase
-ast
-astine
-azam (see -azepam)
-azenil
-azepam
-azepide
-azocine
-azolam (see -azepam)
-azoine (see -buzone)
-azosin

B
-bacept (see -cept)
-bactam
-bamate
-barb
-begron
-benakin (see -kin)
-bendar (see -dan)
-bendazole
-bercept (see -cept)
-bermin (see -ermin)
-bersat
-betasol (see pred)
-bol
-bradine
-brate (see -fibrate)
-bufen
-bulin
-butazone (see -buzone)
-buvir (see vir)
-buzone

C
-caine
-cain-
calci
-capone
-carbef
-carnil (see -azenil)
-castat (see -stat)
-cavir (see vir)
-cef-
-cell-/cel-
cell-ate (see cell-/cel-)
-cellose (see cell-/cel-)
-cept
-cic
-cilibr
-ciclovir (see vir)
-cidin
-ciguat
-cillide (see -cillin)
-cillin
-cillinam (see -cillin)
-cilpine (see -pine)
-cisteine (see -steine)
citabine
-clidine/-clidinium
-clone
-cocept (see -cept)
cog
cogin
-conazole
cort
-coxib
crinat
crine
cromil
curium (see -ium)
cycline

dan
dapsone
decakin (see -kin)
denoson
dermin (see -ermin)
dil
dilol (see -dil)
dipine
dismase (see -ase)
distim (see -stim)
dodekin (see -kin)
dopa
dotril (see -tril/-trilat)
dox (see -ox/-alox)
dralazine
drine
dronic acid
dutant (see -tant)
dyl (see -dil)

E
-ectin
-elestat (see -stat)
elvekin (see -kin)
emcinal
enicokin (see -kin)
-entan
(-)eptacog (see -cog)
erg
-eridine
-ermin
estr
-ethidine (see -eridine)
exakin (see -kin)
exine
F
farcept (see -cept)
-fenamate (see -fenamic acid)
-fenactic acid
-fenin
-fenine
-fentanil
-fentrine
-fermin (see -ermine)
fibran
-fibrate
-filermin (see -ermine)
flapon
-flurane
-formin
fos
-fosine (see -fosi)
fovir (see vir)
-fradil
-frine (see -drine)
fungin
-fylline
G
Gab
gado-
gatan
gene
gest
-gestr- (see estr)
giline
gillin
gli
-gliflozin (see gli)
gliptin (see gli)
glitazar (see gli)
glitazone (see gli)
glumide
-glutide (see -tide)
golide
-gosivir (see vir)
gramostim (see -stim)
grastim (see -stim)
grel-/grel
I
-ibine (see -ribine)
-icam
-ifene
-igetide (see -tide)
ilide
imex
-imibe
-imod
-imus
-in (see -stat)
K
-kacin
-kalant
-kalim
-kef-
-kin
-ki(n)-(see -mab)
N
nab
-nabant
-nacept (see -cept)
nakin (see -kin)
nakinra (see -kira)
nal-
naritide (see -tide)
navir (see vir)
nermin (see -ermine)
nercept (see -cept)
nertant (see -tant)
etant (see -tant)
nicate (see nico-)
nicine
nico-/nic-/ni-
nidazole
nidine (see -onidine)
nifur-
nil (see -azenil)
nitro/-nitr/-nit/-ni/-ni-
-nixin
(-)nonacog (see -cog)

O
-octakin (see -kin)
-octadekin (see -kin)
(-)octocog (see -cog)
-ol
-olol
-olone (see pred)
-onakin (see -kin)
-one
-onide
-onidine
-onium (see -ium)
-opamine (see -dopa)
-orex
-orph- (see orphan)
orphan
-otermin (see -ermin)
-ox/-alox
-oxacin
-oxan(e)
-oxanide (see -anide)
-oxef (see cef-)
-oxepin (see -pine)
-oxetine
-oxicam (see -icam)
-oxifene (see -ifene)
-oxopine (see -pine)

P
-pafant
-pamide
-pamil
-parcin
-parib
-parin
-parinux (see -parin)
-paril/-patrilat (see -tril/-trilat)
-pendyl (see -dil)
-penem
-perfl(u)-
-peridol (see -perone)
-peridone (see -perone)
-perone
-pidem
-pin(e)
-piprant

-piprazole (see -prazole)
-pirone (see -pirone)
-pirox (see -ox/-axol)
-pitant (see -tant)
-plact
-pladib
-planin
-plase (see -ase)
-plasmid (see -gene)
-platin
-plermin (see -ermin)
-plestim (see -stim and -kin)
-plon
-poetin
-porfim
-poride
-pramine
-prazole
-pred
-paraline (see -terol)
-previn (see vir)
-pride
-pril
-prilat (see -pril)
-prim
-pristin
-profen
-prost
-prostil (see prost)

Q
-quidar
-quin(e)
-quinil (see -azenil)

R
-racetam
-racil
-relin
-relix
-renone
-restat (see -stat)
-retin
-rilone
-rifen
-rixin

-rizine (see -izine)
-rolimus (see -imus)
-rozole
-rsen
-rubicin

S
-sal
-salazo- (see sal)
-salazine/-salazide (see sal)
-salan (see sal)
-sartan
-semide
-serin (see -ermin)
-serod
-serpine
-sertib
-setron
-som-
-sopine (see -pine)
-spirole
-stat/-stat-
-steine
-ster-
-steride (see -ster-)
-stigmine
-stim
-sulf-
-sulfan

T
-tacept (see cept)
-tadine
-tant
-tapide
-taxel
-tecan
-tegrast (see –ast)
-tepa
-tepine (see -pine)
-teplase (see -ase)
-termin (see -ermin)
-terol
-thiouracil (see -racil)
-tiazem
-tibant
-tide
-tidine
-tilide (see -ilide)
-tiline (see -tripyline)-tinib
-tirelin (see -relin)
-tizide
-tocin
-toin
-trakin (see -kin)
-trakinra (see -kinra)
-tredekin (see -kin)
-trexate
-trexed
-tricin
-tril/-trilat
-triptan
-triptyline
-troban
-trodest (see -ast)
trop

U
-uplase (see -ase)
-uridine

V
-vaptan
-vastatin (see -stat)
-vec (see -gene)
-verine
-vin/-vin-
vir
-vircept (see -cept)
-virine (see vir)
-viroc (see vir)
-virsen
-virumab (see mab)
-vos (see fos)
-vudine (see -uridine)

X
-xaban
-xanox (see -ox/-alox)

Y
-yzine (see -izine)
PART II B

ALPHABETICAL LIST OF COMMON STEMS AND THEIR DEFINITION

A

-abine (see -arabine and -citabine) arabinofuranosyl derivatives; nucleosides antiviral or antineoplastic agents, cytarabine or azacitidine derivatives
-ac anti-inflammatory agents, ibufenac derivatives
-acetam (see -racetam) amide type nootrope agents, piracetam derivatives
-actide synthetic polypeptide with a corticotropin-like action
-adol/-adol- analgesics
-adom analgesics, tifluadom derivatives
-afenone antiarrhythmics, propafenone derivatives
-afil inhibitors of phosphodiesterase PDE5 with vasodilator action
-aj- antiarrhythmics, ajmaline derivatives
-al aldehydes
-aldrate antacids, aluminium salts
-alol (see -olol) aromatic ring related to -olols
-alox (see -ox) antacids, aluminium derivatives
-amivir (see vir) neuraminidase inhibitors
-ampanel antagonists of the ionotropic non-NMDA (N-methyl-D-aspartate) glutamate receptors (Namely the AMPA (amino-hydroxymethylisoxazole-propionic acid) and/or KA (kainite antagonist) receptors)
-andr steroids, androgens
-anib angiogenesis inhibitors
-anide -
-anserin serotonin receptor antagonists (mostly 5-HT₂)
-antel anthelmintics (undefined group)
-antrone antineoplastics; anthraquinone derivatives
-pine (see -pine) tricyclic compounds
-(ar)abine arabinofuranosyl derivatives
-arit antiarthritic substances, acting like clobuzarit and lobenzarit, (mechanism different from anti-inflammatory type substances, e.g. -fenamates or -profens)
arol anticoagulants, dicoumarol derivatives
-arone -
arotene arotinoid derivatives
arte- antimalarial agents, artemisinin related compounds
-ase enzymes
-ast antiasthmatics or antiallergics, not acting primarily as antihistaminics
-astine antihistaminics
-azam (see -azepam) diazepam derivatives
-azenil benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)
-azepam diazepam derivatives
-azepide cholecystokinin receptor antagonists, benzodiazepine derivatives
-azocine narcotic antagonists/agonists related to 6,7-benzomorphan
-azolam (see -azepam) diazepam derivatives
-azoline antihistaminics or local vasoconstrictors, antazoline derivatives
-azone (see -buzone) anti-inflammatory analgesics, phenylbutazone derivatives
-azosin antihypertensive substances, prazosin derivatives

B
-bacept (see -cept) B-cell activating factor receptors
-bactam β-lactamase inhibitors
-bamate tranquillizers, propanediol and pentanediol derivatives
barb  hypnotics, barbituric acid derivatives
-begron  β3-adrenoreceptor agonists
-benakin (see -kin)  interleukin-1 analogues and derivatives
-bendar (see -dan)  cardiac stimulants, pimobendan derivatives
-bendazole  anthelminthics, tiabendazole derivatives
-bercept (see -cept)  target: VEGF receptors
-bermin (see -ermin)  vascular endothelial growth factors
-bersat  anticonvulsants, benzoylamino-benzpyran derivatives
-betasol (see pred)  prednisone and prednisolone derivatives
bol  anabolic steroids
-bradine  bradycardic agents
-brate (see -fibrate)  clofibrate derivatives
-bufen  non-steroidal anti-inflammatory agents, arylbutanoic acid derivatives
-bulin  antineoplastics; mitotic inhibitor, tubulin binder
-butazone (see -buzone)  anti-inflammatory analgesics, phenylbutazone derivatives
-buvir (see vir)  RNA polymerase (NS5B) inhibitors
-buzone  anti-inflammatory analgesics, phenylbutazone derivatives

c
-caine  local anaesthetics
-cain-  class I antiarrhythmics, procainamide and lidocaine derivatives
-calci  vitamin D analogues/derivatives
-capone  catechol-O-methyltransferase (COMT) inhibitors
carbef  antibiotics, carbacephem derivatives
-carnil (see -azenil)  benzodiazepine receptor antagonists/agonists (carboline derivatives)
-castat (see -stat)
dopamine-hydroxylase inhibitors

-cavir (see vir)
carbocyclic nucleosides

cef-
antibiotics, cefalosporanic acid derivatives

cell-/cel-
cellulose derivatives

cell-ate (see cell-/cel-)
cellulose ester derivatives for substances containing acidic residues

-cellose (see cell-/cel-)
cellulose ether derivatives

-cept
receptor molecules, native or modified (a preceding infix should designate the target)

-cic
hepatoprotective substances with a carboxylic acid group

-ciclib
cyclin dependant kinase inhibitors

-ciclovir (see vir)
antivirals, bicyclic heterocycles compounds

-cidin
naturally occurring antibiotics (undefined group)

-ciguat
guanylate cyclase activators and stimulators

-cillide (see -cillin)
antibiotics, 6-aminopenicillanic acid derivatives

-cillin
antibiotics, 6-aminopenicillanic acid derivatives

-cillinam (see -cillin)
antibiotics, 6-aminopenicillanic acid derivatives

-cilpine (see -pine)
tricyclic compounds

-cisteine (see -steine)
mucolytics, other than bromhexine derivatives

-citabine
nucleosides antiviral or antineoplastic agents, cytarabine or azacitidine derivatives

-clidine/-clidinium
muscarinic receptor agonists/antagonists

-clone
hypnotic tranquillizers

-cocept (see -cept)
complement receptors

-cog
blood coagulation factors

cogin
blood coagulation cascade inhibitors

-conazole
systemic antifungal agents, miconazole derivatives

cort
corticosteroids, except prednisolone derivatives
-coxib
selective cyclo-oxygenase inhibitors
-crinat
diuretics, etacrynic acid derivatives
-crine
acridine derivatives
-cromil
antiallergics, cromoglicic acid derivatives
-curium (see -ium)
curare-like substances
-cycline
antibiotics, protein-synthesis inhibitors, tetracycline derivatives

D
-dan
cardiac stimulants, pimobendan derivatives
-dapsone
antimycobacterials, diaminodiphenylsulfone derivatives
-decakin (see -kin)
interleukin-10 analogues and derivatives
-denoson
adenosine A receptor agonists
-dermin (see -ermin)
epidermal growth factors
-dil
vasodilators
-dilol (see -dil)
vasodilators
-dipine
calcium channel blockers, nifedipine derivatives
-dismase (see -ase)
enzymes with superoxide dismutase activity, see -ase item V
-distim (see -stim)
combination of two different types of colony stimulating factors
-dodekin (see -kin)
interleukin-12 analogues and derivatives
-dopa
dopamine receptor agonists, dopamine derivatives, used as antiparkinsonism/prolactin inhibitors
-dox (see -ox/-alox)
antibacterials, quinazoline dioxide derivatives
-dralazine
antihypertensives, hydrazinephthalazine derivatives
-drine
sympathomimetics
-dronic acid
calcium metabolism regulator, pharmaceutical aid
-dutant (see -tant)
neurokinin NK_2 receptor antagonist
-dyl (see -dil)
vasodilators
E
-ectin antiparasitics, ivermectin derivatives
-elestat (see -stat) elastase inhibitors
-elvekin (see -kin) interleukin-11 analogues and derivatives
-emcinal erythromycin derivatives lacking antibiotic activity, motilin agonists
-enicokin (see -kin) interleukin-21 human analogues and derivatives
-entan endothelin receptor antagonists
(-)eptacog (see -cog) blood coagulation VII
erg ergot alkaloid derivatives
-eridine analgesics, pethidine derivatives
-ermin growth factors
estr estrogens
-etanide (see -anide) diuretics, piretanide derivatives
-ethidine (see -eridine) analgesics, pethidine derivatives
-exakin (see -kin) interleukin-6 analogues and derivatives
-exine mucolytic, bromhexine derivatives

F
-farcept (see -cept) subgroup of interferon receptors
-fenamate (see -fenamic acid) "fenamic acid" derivatives
-fenamic acid anti-inflammatory, anthranilic acid derivatives
-fenin diagnostic aids; (phenylcarbamoyl)methyl iminodiacetic acid derivatives
-fenine analgesics, glafenine derivatives (subgroup of fenamic acid group)
-fentanil opioid receptor agonists, analgesics, fentanyl derivatives
-fentrine inhibitors of phosphodiesterases
-fermin (see -ermin)  
fibroblast growth factors

-fiban  
fibrinogen receptor antagonists (glycoprotein IIb/IIIa receptor antagonists)

-fibrate  
clofibrate derivatives

-filermin (see -ermin)  
leukemia-inhibiting factor

-flapon  
5-lipoxygenase-activating protein (FLAP) inhibitor

-flurane  
halogenated compounds used as general inhalation anaesthetics

-formin  
antihyperglycaemics, phenformin derivatives

fos  
insecticides, anthelminthics, pesticides etc., phosphorous derivatives

-fosfamide (see -fos)  
alkylating agents of the cyclophosphamide group

-fosine (see -fos)  
cytostatic

-fovir (see vir)  
phosphonic acid derivatives

-fradil  
calcium channel blockers acting as vasodilators

-frine (see -drine)  
sympathomimetic, phenethyl derivatives

-fungin  
antifungal antibiotics

-fylline  
N-methylated xanthine derivatives

G

gab  
gabamimetic agents

gado-  
diagnostic agents, gadolinium derivatives

-gatran  
thrombin inhibitor, antithrombotic agent

-gene  
gene therapy products

gest  
steroids, progestogens

-gestr- (see estr)  
estrogens

-giline  
monoamine oxydase (MAO)-inhibitors type B

-gillin  
antibiotics produced by Aspergillus strains
gli antihyperglycaemics

-gliflozin (see gli) sodium glucose co-transporter inhibitors, phlorizin derivatives

-gliptin (see gli) dipeptidyl aminopeptidase–IV inhibitors

-glitazar (see gli) peroxisome proliferator activating receptor-γ (PPAR-γ) agonists

-glitazone (see gli) peroxisome proliferator activating receptor-γ (PPAR-γ) agonists, thiazolidinedione derivatives

-glumide cholecystokinin (CCK) antagonists, antiulcer, anxiolytic agent

-glutide (see -tide) Glucagon-Like Peptide (GLP) analogues

-golide dopamine receptor agonists, ergoline derivatives

-gosivir (see vir) glucoside inhibitors

-gramostim (see -stim) granulocyte macrophage colony stimulating factor (GM-CSF) types substances

-grastim (see -stim) granulocyte colony stimulating factor (G-CSF) type substances

-grel/-grel platelet aggregation inhibitors

guan- antihypertensives, guanidine derivatives

I

-ibine (see -ribine) ribofuranyl-derivatives of the “pyrazofurin” type

-icam anti-inflammatory, isoxicam derivatives

-ifene antiestrogens or estrogen receptor modulators, clomifene and tamoxifen derivatives

-igetide (see -tide) peptides and glycopeptides

-ilide class III antiarrhythmics, sematilide derivatives

-imex immunostimulants

-imibe antihyperlipidaemics, acyl CoA: cholesterol acyltransferase (ACAT) inhibitors

-imod immunomodulators, both stimulant/suppressive and stimulant

-imus immunosuppressants (other than antineoplastics)
-ine alkaloids and organic bases
-inostat (see stat) histone deacetylase inhibitors
-io- iodine-containing contrast media
-iod-/io- iodine-containing compounds other than contrast media
-irudin thrombin inhibitors, hirudin derivatives
-isomide class I antiarrhythmics, disopyramide derivatives
-ium quaternary ammonium compounds
-izine (-yzine) diphenylmethyl piperazine derivatives

K
-kacin antibiotics, kanamycin and bekamycin derivatives (obtained from *Streptomyces kanamyceticus*)
-kalant potassium channel blockers
-kalim potassium channel activators, antihypertensive
-kef- enkephalin agonists
-kin interleukin type substances
-ki(n)- (see -mab) target: interleukin
-kinra (see -kin) interleukin receptor antagonists
-kiren renin inhibitors

L
-lefacept (see -cept) lymphocyte function-associated antigen 3 receptors
-leukin (see -kin) interleukin-2 analogues and derivatives
-lisib phosphatidylinositol 3-kinase inhibitors, antineoplastics
-listat (see –stat) gastrointestinal lipase inhibitors
-lubant leukotriene B₄ receptor antagonist
-lukast (see –ast) leukotriene receptor antagonists
-lutamide  non-steroid antiandrogens

**M**

-mab  monoclonal antibodies

-mantadine  adamantane derivatives

-mantine (see -mantadine)  adamantane derivatives

-mantone (see -mantadine)  adamantane derivatives

-mapimod (see -imod)  mitogen-activated protein (MAP) kinase inhibitors

-mastat (see -stat)  matrix metalloproteinase inhibitors

-meline  cholinergic agents (muscarine receptor agonists/partial antagonists used in the treatment of Alzheimer's disease)

-mer-/mer  mercury-containing drugs, antimicrobial or diuretic

-mer  polymers

-mesine  sigma receptor ligands

-mestane  aromatase inhibitors

-metacin  anti-inflammatory, indometacin derivatives

-met(h)asone (see pred)  prednisone and prednisolone derivatives

-micin  aminoglycosides, antibiotics obtained from various *Micromonospora*

-mifene (see -ifene)  antiestrogens, clomifene and tamoxifen derivatives

-milast (see -ast)  phosphodiesterase IV (PDE IV) inhibitors

-mito-  antineoplastics, nucleotoxic agents

-monam  monobactam antibiotics

-morelin (see -relin)  growth hormone release-stimulating peptides

-mostim (see -stim)  macrophage stimulating factors (M-CSF) type substances

-motide (see -tide)  immunological agents for active immunization

-motine  antivirals, quinoline derivatives
-moxin  monoamine oxidase inhibitors, hydrazine derivatives
-mulin  antibacterials, pleuromulin derivatives
-mustine  antineoplastic, alkylating agents, (β-chloroethyl)amine derivatives
-mycin  antibiotics, produced by *Streptomyces* strains (see also -kacin)

N

nab  cannabinoid receptors agonists
-nabant  cannabinoid receptors antagonists
-nacept (see -cept)  interleukin-1 receptors
-nakin (see -kin)  interleukin-1 analogues and derivatives
-nakinra (see -kin)  interleukin-1 receptor antagonists

nal-  opioid receptor antagonists/agonists related to normorphine
-naritide (see -tide)  peptides and glycopeptides
-navir (see vir)  Human Immunodeficiency Virus (HIV) protease inhibitors
-nermin (see -ermin)  tumour necrosis factor
-nercept (see -cept)  tumour necrosis factor receptors
-nertant (see -tant)  neurotensin antagonists
-netant (see -tant)  neurokinin NK3 receptor antagonists
-nicate (see nico-)  antihypercholesterolaemic and/or vasodilating nicotinic acid esters
-nicline  nicotinic acetylcholine receptor partial agonists / agonists
-nico-/nic-/ni-  nicotinic acid or nicotinoyl alcohol derivatives
-nidazole  antiprotozoals and radiosensitizers, metronidazole derivatives
-nidine (see -onidine)  antihypertensives, clonidine derivatives
-nifur-  5-nitrofuran derivatives
-nil (see -azenil)  benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)
-nitro/-nitr/-nit-/ni-/ni-  NO₂ - derivatives
-nixin anti-inflammatory, anilinonicotinic acid derivatives

(-)nonacog (see -cog) blood factor IX

O

octakin (see -kin) interleukin-8 analogues and derivatives

-octadekin (see -kin) interleukin-18 human analogues and derivatives

(-)octocog (see -cog) blood factor VIII

-ol for alcohols and phenols

-olol β-adrenoreceptor antagonists

-olone (see pred) steroids other than prednisolone derivatives

-onakin (see -kin) interleukin-1 analogues and derivatives

-one ketones

-onide steroids for topical use, acetal derivatives

-onidine antihypertensives, clonidine derivatives

-onium (see -ium) quaternary ammonium compounds

-opamine (see -dopa) dopaminergic agents dopamine derivatives used as cardiac stimulant/antihypertensives/diuretics

-orex anorexics

-orph- (see orphan) opioid receptor antagonists/agonists, morphinan derivates

orphan opioid receptor antagonists/agonists, morphinan derivates

-otermin (see -ermin) bone morphogenetic proteins

-ox/-alox antacids, aluminium derivatives

-oxacin antibacterials, nalidixic acid derivatives

-oxan(e) benzodioxane derivatives

-oxanide (see -anide) antiparasitics, salicylanilides and analogues

-oxef (see cef-) antibiotics, oxacefalosporanic acid derivatives

-oxepin (see -pine) tricyclic compounds
-oxetine serotonin and/or norepinephrine reuptake inhibitors, fluoxetine derivatives

-oxicam (see -icam) anti-inflammatory, isoxicam derivatives

-oxifene (see -ifene) antiestrogens or estrogen receptor modulators, clomifene and tamoxifen derivatives

-oxopine (see -pine) tricyclic compounds

P

-pafant platelet-activating factor antagonists

-pamide diuretics, sulfamoylbenzoic acid derivatives (could be sulfamoylbenzamide)

-pamil calcium channel blocker, verapamil derivatives

-parcin for glycopeptide antibiotics

-parib poly-ADP-Ribose polymerase inhibitors

-parin heparin derivatives including low molecular mass heparins

-parinux (see -parin) synthetic heparinoids

-pendyl (see -dil) vasodilators

-penem analogues of penicillanic acid antibiotics modified in the five-membered ring

perflu- perfluorinated compounds used as blood substitutes and/or diagnostic agents

-peridol (see -perone) antipsychotics, haloperidol derivatives

-peridone (see -perone) antipsychotics, risperidone derivatives

-perone tranquillizers, neuroleptics, 4'-fluoro-4-piperidinobutyrophenone derivatives

-pidem hypnotics/sedatives, zolpidem derivatives

-pin(e) tricyclic compounds

-piprant prostaglandin receptors antagonists, non-prostanoids

-piprazole (see -prazole) psychotropics, phenylpiperazine derivatives
-pirone (see -spirone) anxiolytics, buspirone derivatives
-pirox (see -ox/-alox) antimycotic pyridone derivatives
-pitant (see -tant) neurokinin NK₁ (substance P) receptor antagonist
-plact platelet factor 4 analogues and derivatives
-pladib phospholipase A₂ inhibitors
-planin glycopeptide antibacterials (Actinoplanes strains)
-plase (see -ase) enzymes
-plasmid (see -gene) gene therapy products
-platin antineoplastic agents, platinum derivatives
-plermin (see -ermin) platelet-derived growth factor
-plestim (see -stim and -kin) interleukin-3 analogues and derivatives
-plon imidazopyrimidine or pyrazolopyrimidine derivatives, used as anxiolytics, sedatives, hypnotics
-poetin erythropoietin type blood factors
-porfin benzoporphyrin derivatives
-poride Na⁺/H⁺ antiport inhibitor
-pramine substances of the imipramine group
-prazole antiulcer, benzimidazole derivatives
-pred prednisone and prednisolone derivatives
-prenaline (see -terol) bronchodilators, phenethylamine derivatives
-pressin vasoconstrictors, vasopressin derivatives
-previr (see vir) Hepatitis Virus C (HVC) protease inhibitors
-pride sulpiride derivatives
-pril angiotensin-converting enzyme inhibitors
-prilat (see -pril) angiotensin-converting enzyme inhibitors
-prim antibacterials, dihydrofolate reductase (DHFR) inhibitors, trimethoprim derivatives
INN – The use of stems

-pris- steroidal compounds acting on progesterone receptors (excluding -gest- compounds)

-pristin antibacterials, streptogramins, protein synthesis inhibitors, pristinamycin derivatives

-profen anti-inflammatory agents, ibuprofen derivatives

prost prostaglandins

-prostil (see prost) prostaglandins, anti-ulcer

Q

-quidar drugs used in multidrug resistance, quinoline derivatives

-quin(e) quinoline derivatives

-quinil (see -azenil) benzodiazepine receptor agonists, also partial or inverse (quinoline derivatives)

R

-racetam amide type nootrope agents, piracetam derivatives

-racil uracil type antineoplastics

-relin pituitary hormone-release stimulating peptides

-relix gonadotropin-releasing-hormone (GnRH) inhibitors, peptides

-renone aldosterone antagonists, spironolactone derivates

-restat (see -stat) aldose reductase inhibitors

retin retinol derivatives

-ribine ribofuranyl-derivatives of the "pyrazofurin" type

rifa- antibiotics, rifamycin derivatives

-rinone cardiac stimulants, amrinone derivatives

-rixin chemokine CXCR receptors antagonists

-rizine (see -izine) antihistaminics/cerebral (or peripheral) vasodilators

-rolimus (see -imus) immunosuppressants, rapamycin derivatives
-rozole aromatase inhibitors, imidazole-triazole derivatives
-rsen antisense oligonucleotides
-rubicin antineoplastics, daunorubicin derivatives

S
sal salicylic acid derivatives
salazo- phenylazosalicylic acid derivatives antibacterial
-salan brominated salicylamide derivatives disinfectant
-sartan angiotensin II receptor antagonists, antihypertensive (non-peptidic)
-semide diuretics, furosemide derivatives
-sermin (see -ermin) insulin-like growth factors
-serod serotonin receptor antagonists and partial agonists
-serpine derivatives of Rauwolfia alkaloids
-sertib serine/threonine kinase inhibitors
-setron serotonin receptor antagonists (5-HT3) not fitting into other established groups of serotonin receptor antagonists
-som- growth hormone derivatives
-sopine (see -pine) tricyclic compounds
-spirone anxiolytics, buspirone derivatives
-stat/-stat- enzyme inhibitors
-steine mucolytics, other than bromhexine derivatives
-ster- androgens/anabolic steroids
-steride (see -ster-) androgens/anabolic steroids
-stigmine acetylcholinesterase inhibitors
-stim colony stimulating factors
-sulfa- anti-infectives, sulfonamides
-sulfan antineoplastic, alkylating agents, methanesulfonates

T

-tacept (see -cept) cytotoxic T lymphocyte-associated antigen 4 (CTLA-4) receptors
-tadine tricyclic histamine-H\textsubscript{1} receptor antagonists, tricyclic compounds
-tant neurokinin (tachykinin) receptor antagonists
-tapide microsomal triglyceride transfer protein (MTP) inhibitors
-taxel antineoplastics; taxane derivatives
-tecan antineoplastics, topoisomerase I inhibitors
-tegrast (see -ast) integrin antagonists
-tepa antineoplastics, thiotepa derivatives
-tepine (see -pine) tricyclic compounds
-teplase (see -ase) tissue type plasminogen activators, see -ase item VI
-tercept (see -cept) transforming growth factors receptors
-termin (see -ermin) transforming growth factor
-terol bronchodilators, phenethylamine derivatives
-terone antiandrogens
-thiouracil (see -racil) uracil derivatives used as thyroid antagonists
-tiazem calcium channel blockers, diltiazem derivatives
-tibant bradykinin receptor antagonists
-tide peptides and glycopeptides (for special groups of peptides see -actide, -pressin, -relin, -tocin)
-tidine histamine-H\textsubscript{2}-receptor antagonists, cimetidine derivatives
-tilide (see -ilide) class III antiarrhythmics, sematilide derivatives
-tiline (see -triptyline) antidepressants, dibenzo[a,d]cycloheptane or cycloheptene derivatives
-tinib tyrosine kinase inhibitors
-tirelin (see -relin) thyrotropin releasing hormone analogues
-tizide  diuretics, chlorothiazide derivatives
-tocin  oxytocin derivatives
-toin  antiepileptics, hydantoin derivatives
-trakin (see -kin)  interleukin-4 analogues and derivatives
-trakinra (see -kinra)  interleukin-4 receptor antagonists
-tredekin (see -kin)  interleukin-13 analogues and derivatives
-trexate  folic acid analogues
-trexed  antineoplastics; thymidilate synthetase inhibitors
-tricin  antibiotics, polyene derivatives
-tril/trilat  endopeptidase inhibitors
-triptan  serotonin (5HT₁) receptor agonists, sumatriptan derivatives
-triptyline  antidepressants, dibenzo[a,d]cycloheptane or cyclopheptene derivatives
-troban  thromboxane A₂-receptor antagonists; antithrombotic agents
-trodast (see -ast)  thromboxane A₂-receptor antagonists, antiasthmatics
trop  atropine derivatives

U
-uplase (see -ase)  urokinase type plasminogen activator, see -ase item VII
-ur (see -uridine)  uridine derivatives used as antiviral agents and as antineoplastics
-uridine  uridine derivatives used as antiviral agents and as antineoplastics

V
-vaptan  vasopressin receptor antagonists
-vastatin (see -stat)  antihyperlipidaemic substances, HMG CoA reductase inhibitors
-vec (see -gene)  gene therapy product
<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-verine</td>
<td>spasmolytics with a papaverine-like action</td>
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<tr>
<td>vin-/vin-</td>
<td>vinca alkaloids</td>
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<tr>
<td>vir</td>
<td>antivirals (undefined group)</td>
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<tr>
<td>-vircept (see -cept)</td>
<td>antiviral receptors</td>
</tr>
<tr>
<td>-virine (see vir)</td>
<td>non-nucleoside reverse transcriptase inhibitors (NNRTI)</td>
</tr>
<tr>
<td>-viroc (see -vir)</td>
<td>CCR5 (Chemokine CC motif receptor 5) receptor antagonists</td>
</tr>
<tr>
<td>-virsen</td>
<td>antisense oligonucleotides</td>
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<tr>
<td>-vos (see fos)</td>
<td>insecticides, anthelmintics, pesticides etc., phosphorus derivatives</td>
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<tr>
<td>-vudine (see -uridine)</td>
<td>uridine derivatives used as antiviral agents and as antineoplastics</td>
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<tr>
<td>X</td>
<td></td>
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<tr>
<td>-xaban</td>
<td>blood coagulation factor X\textsubscript{A} inhibitors, antithrombotics</td>
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<td>-xanox (see -ox/-alox)</td>
<td>anti-allergics, tixanox group</td>
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<tr>
<td>Y</td>
<td></td>
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<tr>
<td>-yzine (see -izine)</td>
<td>diphenylmethyl piperazine derivatives</td>
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<tr>
<td>-zafone</td>
<td>alozafone derivatives</td>
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<td>-zepine (see -pine)</td>
<td>tricyclic compounds</td>
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<tr>
<td>-zolast (see -ast)</td>
<td>leukotriene biosynthesis inhibitors</td>
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<tr>
<td>-zomib</td>
<td>proteasome inhibitors</td>
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<tr>
<td>-zone (see -buzone)</td>
<td>anti-inflammatory analgesics, phenylbutazone derivatives</td>
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<tr>
<td>-zotan</td>
<td>5-HT\textsubscript{1A} receptor agonists / antagonists acting primarily as neuroprotectors</td>
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</tbody>
</table>
Acknowledgements

The INN Secretariat extends its thanks to Dr R. Boudet-Dalbin, France, for the graphic representations of the chemical formulae in this document.
PART III

Stem classification with corresponding examples of stems and their definition

<table>
<thead>
<tr>
<th>A000</th>
<th>CNS DEPRESSANTS</th>
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<tr>
<td>A100</td>
<td>General anaesthetics</td>
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<td>A110</td>
<td>General anaesthetics, volatile</td>
<td>-flurane</td>
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<td>A120</td>
<td>General anaesthetics, other</td>
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<td>A200</td>
<td>Hypnotics - sedatives</td>
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<tr>
<td>A210</td>
<td>Barbiturates</td>
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<td>A220</td>
<td>Hypnotic sedatives, other</td>
<td>-clone</td>
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<td>-plon</td>
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<td>A240</td>
<td>Chloral derivatives, hypnotic sedatives</td>
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<td>A300</td>
<td>Centrally acting voluntary muscle tone modifying drugs</td>
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<tr>
<td>A310</td>
<td>Antiepileptics</td>
<td>-bersat</td>
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<td>Hydantoins, Antiepileptics</td>
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<td>Acetylureas, Antiepileptics</td>
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<td>Oxazolidinediones, Antiepileptics</td>
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<td>Succinimides, Antiepileptics</td>
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<td>A316</td>
<td>Antiepileptics, other</td>
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<td>A320</td>
<td>Central anticholinergics</td>
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<td>Code</td>
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<tr>
<td>A330</td>
<td>Centrally acting voluntary-muscle relaxants</td>
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<td>A400</td>
<td>Analgesics and antipyretics, please see AA code here below.</td>
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<tr>
<td>A500</td>
<td>Antivertigo drugs</td>
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</table>

**AA- ANALGESICS AND ANTIPYRETICS***

*The stems here below have been extracted from the A-CNS depressant category since not all analgesics are CNS depressants. In this context, a subcategory “AA- Analgesics and antipyretics” has been created to better reflect this information.*

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<thead>
<tr>
<th>Code</th>
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<tr>
<td>A400</td>
<td>Analgesics</td>
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<tr>
<td>A410</td>
<td>Opioids</td>
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<td></td>
<td>-adol or -adol-</td>
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<td>analgesics</td>
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<tr>
<td>A410</td>
<td>-azocine</td>
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<td>narcotic antagonists/agonists related to 6,7-benzomorphan</td>
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<td>A410</td>
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<td>analgesics, pethidine derivatives</td>
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<td>-ethidine</td>
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<td>see -eridine</td>
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<td>-fentanil</td>
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<td>opioid receptor agonists, analgesics, fentanyl derivatives</td>
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<td>nal-</td>
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<td>opioid receptor antagonists/agonists related to normorphine</td>
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<td>opioid receptor antagonists/agonists, morphinan derivates; -orphine, -orphinol, -orphone</td>
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<td>Analgesics - Antipyretics</td>
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<td>A420</td>
<td>-adol or -adol-</td>
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<td>analgesics</td>
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<td>A420</td>
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<td>antiarthritic substances, acting like clobuzarit and lobenzarit (mechanism different from anti-inflammatory type substances, e.g. -fenamates or -profens)</td>
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<td>Analgesics, other</td>
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<td>A430</td>
<td>-fenine, phenine</td>
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</tbody>
</table>

| A440  | Central antiemetics |

<table>
<thead>
<tr>
<th>B000</th>
<th>CNS STIMULANTS</th>
<th>-ampanel</th>
<th>antagonists of the ionotropic non-NMDA (N-methyl-d-aspartate) glutamate receptors (Namely the AMPA (amino-hydroxymethyl-isoxazole-propionic acid) and/or KA (kainite antagonist) receptors)</th>
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<td>B100</td>
<td>Analeptics</td>
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<td>-racetam</td>
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<th><strong>PSYCHOPHARMACOLOGICS</strong></th>
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<td>cholinergic agents (muscarinic receptor agonists/partial antagonists used in the treatment of Alzheimer's disease)</td>
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<td>-curium</td>
<td>curare-like substance; see -ium</td>
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<td>quaternary ammonium compounds; -curium: curare-like substances; -onium</td>
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<td>antihistaminics or local vasoconstrictors, antazoline derivatives</td>
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<td>-serpine derivatives of <em>Rauwolfia</em> alkaloids</td>
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<th>F000</th>
<th>AGENTS ACTING ON SMOOTH MUSCLES</th>
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<td>Spasmolytics, general</td>
<td>-verine spasmolytics with a papaverine-like action</td>
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<td>Vasodilators</td>
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<td>-ciguat guanylate cyclase activators and stimulators</td>
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<td>Coronary vasodilators, also calcium channel blockers</td>
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<td>-fradil calcium channel blockers acting as vasodilators</td>
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<td>-pamil calcium channel blockers, verapamil derivatives</td>
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<td>-tiazem calcium channel blockers, diltiazem derivatives</td>
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<td>Drugs acting on gastrointestinal system</td>
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<td>Choleretics (and hepatoprotective agents)</td>
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<td>Digestive enzymes</td>
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<td>Antidiarrhoeals</td>
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### AGENTS INFLUENCING THE RESPIRATORY TRACT AND ANTIALLERGICS

- **-ast**
  - antiasthmatics or antiallergics, not acting primarily as antihistaminics; *-lukast*: leukotriene receptor antagonist; *-milast*: phosphodiesterase IV (PDE IV) inhibitors; *-trodast*: thromboxane A₂ receptor antagonists, antiasthmatics, *-zolast*: leukotriene biosynthesis inhibitors

- **-cromil**
  - antiallergics, cromoglicic acid derivatives

- **-exine**
  - mucolytic, bromhexine derivatives

- **-fentrine**
  - inhibitors of phosphodiesterases

- **-lukast**
  - leukotriene receptor antagonists, see *-ast*

- **-steine**
  - mucolytics, other than bromhexine derivatives

- **-trodast**
  - thromboxane A₂ receptor antagonists, antiasthmatics; see *-ast*

- **-xanox**
  - antiallergic respiratory tract drugs, xanoxic acid derivatives

### Antitussives

- **K100**
  - Antitussives

- **K110**
  - Antitussives - central

- **K120**
  - Antitussives - peripheral

### Expectorants

- **K200**
  - Expectorants
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<th>CYTOTOXICS, TARGETED THERAPIES AND HORMONES IN CANCER THERAPY</th>
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<td>-antrone</td>
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<td>antineoplastics; anthraquinone derivatives</td>
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<td>-(ar)abine</td>
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<td>Antineoplastics - antimetabolites</td>
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<td>-citabine</td>
<td>nucleosides antiviral or antineoplastic agents, cytarabine or azacitidine derivatives</td>
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<td>-trexate</td>
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<td>-uridine</td>
<td>uridine derivatives used as antiviral agents and as antineoplastics; also -udine</td>
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<td>Ornithine decarboxylase inhibitors</td>
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<td>-stat (or -stat-) enzyme inhibitors; -lipastat: pancreatic lipase inhibitors; -restat or -restat-: aldose-reducing inhibitors; -vastatin: antihyperlipidaemic substances, HMG CoA reductase inhibitors</td>
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<td>M100</td>
<td><strong>Anorectics</strong></td>
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<td><strong>Dietetics and antiadipositas drugs</strong></td>
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<td><strong>Bulk forming drugs</strong></td>
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<td>-imibe antihyperlipidaemics, acyl CoA:cholesterol acyltransferase (ACAT) inhibitors,</td>
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<td></td>
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<td>see -stat</td>
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<td>mer- (or -mer-)</td>
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<td>mercury-containing drugs, antimicrobial or diuretic [mer- and -mer- can be used for any type of substances and are no longer restricted to use in INNs for mercury-containing drugs; -mer: polymers]</td>
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<td><strong>Sex hormones and analogues</strong></td>
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<td><strong>Estrogens, also interceptive contraceptive agents e.g. epostane</strong></td>
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<td>Q241</td>
<td>Antagonadotrophins</td>
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<tr>
<td>Q300</td>
<td><strong>Adrenocortical hormones and analogues</strong></td>
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<tr>
<td>Q300</td>
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<tr>
<td>Q300</td>
<td></td>
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<tr>
<td>Q310</td>
<td>Mineralosteroids</td>
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<tr>
<td>Q320</td>
<td>Mineralosteroid antagonists</td>
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<tr>
<td>Q330</td>
<td>Glucosteroids</td>
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<tr>
<td>Q340</td>
<td>Glucosteroids antagonists</td>
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<td><strong>S000</strong></td>
<td><strong>ANTI-INFECTIVES AND DRUGS ACTING ON IMMUNITY</strong></td>
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<td>Ectoparasiticides</td>
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<td>S200</td>
<td>Antiseptics and disinfectants</td>
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<tr>
<td>S210</td>
<td>Antiseptics (excl. heavy metal antiseptics)</td>
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<td>Code</td>
<td>Description</td>
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<td>Heavy metal antiseptics</td>
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<td>S230</td>
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<td>S300</td>
<td>Chemotherapeutics of parasitic diseases</td>
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<tr>
<td>S310</td>
<td>Anthelminthics (excl. antinematode agents)</td>
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<td>S310</td>
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<tr>
<td>S320</td>
<td>Antinematode agents</td>
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<td>Antiprotozoal agents (incl. all arsphenamines)</td>
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<td>S330</td>
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<tr>
<td>S400</td>
<td>Chemotherapeutics of fungal diseases</td>
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<td>S410</td>
<td>Antifungal agents</td>
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<td>S420</td>
<td>Fungicides</td>
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<td>S430</td>
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<tr>
<td>Code</td>
<td>Category</td>
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<td>Antibiotics, antibacterial and antiviral agents</td>
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<td>S520</td>
<td>Antimycobacterials</td>
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<td>S520</td>
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<td>S530</td>
<td>Antiviral</td>
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<tr>
<td>S550</td>
<td>Antibacterial/other</td>
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<td>S600</td>
<td>Antibiotics (except antineoplastic antibiotics)</td>
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<tr>
<td>S600</td>
<td>-monam</td>
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</tr>
<tr>
<td>S600</td>
<td>-mycin</td>
</tr>
<tr>
<td>S600</td>
<td>-parcin</td>
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<td>S600</td>
<td>-penem</td>
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<td>S600</td>
<td>-pristin</td>
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<td>S610</td>
<td>Antibiotics acting on the bacterial cell wall</td>
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<td>S610</td>
<td>cef-</td>
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<td>S610</td>
<td>-cillin</td>
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<td>S610</td>
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<td>S620</td>
<td>Antibiotics affecting cell membrane and with detergent effect</td>
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<td>S630</td>
<td>Antibiotics affecting protein synthesis</td>
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<td>S630</td>
<td>-kacin</td>
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<td>S640</td>
<td>Antibiotics affecting nucleic acid metabolism</td>
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<td>S650</td>
<td>Antibiotics-action unclassified (including β-lactamase inhibitors)</td>
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<td>S650</td>
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<td>S700</td>
<td><strong>Immunomodulators and immunostimulants (incl. gamma globulins)</strong></td>
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</tr>
<tr>
<td>S710</td>
<td>Interferons and immunomodulators</td>
</tr>
</tbody>
</table>

<p>| T000 | <strong>LOCALLY ACTING AGENTS (INCL. DERMATOLOGIC AND INTERNALLY USED DRUGS)</strong> | | |
| T100 | Locally acting externally-applied agents | | |
| T110 | Vasodilators (external) - rubefaciens | | |</p>
<table>
<thead>
<tr>
<th>T200</th>
<th><strong>Locally acting internally-applied agents</strong></th>
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<td>T210</td>
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<td>Lubricant cathartics</td>
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<td>Irritant cathartics</td>
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<td>T240</td>
<td>Gastro-intestinal anti-infectives, non-resorbed</td>
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<td>T250</td>
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<td>T260</td>
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<td><strong>Intravaginal contraceptives</strong></td>
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<table>
<thead>
<tr>
<th>U000</th>
<th><strong>MISCELLANEOUS DRUGS</strong></th>
</tr>
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<tbody>
<tr>
<td>-ermin: growth factors; -dermin: epidermal growth factors; -fermin: fibrinoblast growth factors; -nermin: tumour necrosis factor; -sermin: insulin-like growth factors</td>
<td></td>
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<table>
<thead>
<tr>
<th>U000</th>
<th><strong>gado-</strong> diagnostic agents, gadolinium derivatives</th>
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<tbody>
<tr>
<td>U100</td>
<td><strong>Diagnostic aids</strong></td>
</tr>
<tr>
<td>-fenin</td>
<td>diagnostic aids; (phenylcarbamoyl)methyl iminodiacetic acid derivatives</td>
</tr>
<tr>
<td>U110</td>
<td><strong>Radiocontrast media</strong></td>
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<tr>
<td>io-</td>
<td>iodine-containing contrast media</td>
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<tr>
<td>U110</td>
<td><strong>-io- or iod-</strong> iodine-containing compounds other than contrast media</td>
</tr>
<tr>
<td>U120</td>
<td>Diagnostic aids, other</td>
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<td>U130</td>
<td>Diagnostic radioisotopes</td>
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<tr>
<td>U200</td>
<td><strong>Chelating agents, detoxicants, etc.</strong></td>
</tr>
<tr>
<td>U210</td>
<td>Alcohol detergents</td>
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<tr>
<td>Code</td>
<td>Category</td>
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<td>----------------------------------------------</td>
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<tr>
<td>U300</td>
<td>Anti-inflammatory agents</td>
</tr>
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<td>U310</td>
<td>Non-antipyretic antirheumatics</td>
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<td>U320</td>
<td>Anti-inflammatory agents, other</td>
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<td>U400</td>
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<td>U400</td>
<td>-dronic acid</td>
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<td>V000</td>
<td>UNCLASSIFIED PHARMACOLOGICAL MECHANISMS</td>
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<tr>
<td>V100</td>
<td>Intrauterine contraceptive device</td>
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<td>ENZYMES AND VARIOUS</td>
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<td>W000</td>
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<tr>
<td>Y000</td>
<td>VETERINARY DRUGS</td>
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<tr>
<td>Z000</td>
<td>GENE THERAPY PRODUCTS</td>
</tr>
</tbody>
</table>
PART IV

ALPHABETICAL LIST OF STEMS TOGETHER WITH CORRESPONDING INNS

-abine see -arabine, -citabine

-ac (x) anti-inflammatory agents, ibufenac derivatives

A.4.2.0 (USAN: anti-inflammatory agents (acetic acid derivatives))

\[
\begin{align*}
\text{H}_2\text{C} & \quad \text{CH}_3 \\
\text{COOH} & \quad \text{CH}_3 \\
\end{align*}
\]

(a) -clofenac: aceclofenac (52), alclofenac (23), diclofenac (28), fenclofenac (30)
-dolac: dexpemedolac (71), etodolac (45), pemedolac (58)
-fenac: amfenac (38), bromfenac (55), furofenac (40), ibufenac (14), lexofenac (38), nepafenac (78)
-zolac: bufezolac (39), isofezolac (39), lonazolac (34), mofezolac (64), pirazolac (43), trifezolac (34)

others: anirolac (52), bendazac (22), cinfenoac (41), clidanac (39), clofurac (42), clopirac (30), eltenac (53), felbinac (54), fenclozic acid (22), metiazinic acid (20), prodolic acid (29), tolmetin (23)

(b) bufexamac (20) (anti-inflammatory; acetohydroxamic acid group instead of acetic acid group)

(c) amtolmetin guacil (65), clamidoxic acid (17), fenclozic acid (22), metiazinic acid (20), prodolic acid (29), tolmetin (23)

-acetam see -racetam

-actide synthetic polypeptides with a corticotropin-like action

Q.1.1.1 (USAN: synthetic corticotropins)

(a) alsactide (45), codactide (24), giractide (29), norleusactide (18), seractide (31), tetracosactide (18), tosactide (24), tricosactide (44), tridecactide (97)
-adol (x) analgesics

A.4.1.0
A.4.2/3.0 (USAN: analgesics (mixed opiate receptor agonists/antagonists))

(a) A.4.1.0: acetylmethadol (5), alimadol (39), alphacetymethadol (5), alphamethadol (5), axomadol (87), betacetylmethadol (5), betamethadol (5), indantadol (94), levacetylmethadol (27), noracymethadol (12), tapentadol (87)

A.4.2/3.0: apadoline (74), asimadoline (74), befiradol (99), bromadoline (49), cebranopadol (107), ciprefadol (41), ciramadol (39), cloracetadol (16), dibusadol (24), dimenoxadol (7), diproxadol (34), eluxadoline (109), enadoline (68), faxeladoline (97), filenadol (47), flumexadol (36), fluradoline (48), gaboxadol (48), insalmadol (92), levonantradol (43), lexanopadol (109), lorcinadole (57), moxadolene (45), (deleted in List 48: moxifadol (47)), myfadol (17), nafinoxadol (50), nantradol (42), nerbacadol (56), oxapadol (40), picenadol (47), pinadoline (50), pipradimadol (42), pipramadol (42), pravadoline (60), vadoline (60), profadol (20), radolmidine (82), ruzadoline (71), spiradoline (53), tazadolene (52), tolpadol (48), tramadol (22), veradoline (47)

(b) alfadolone (27), hexapradol (12) (CNS stimulant), nadolol (34), quinestradol (15) (estrogenic)

(c) A.4.1.0: dimephtaneptol (5)

-adom analgesics, tifluadom derivatives

A.4.3.0

(a) lufuradom (50), tifluadom (48)

-afenone antiarrhythms, propafenone derivatives

H.2.0.0

(a) alprafenone (62), berlafenone (63), diprafenone (48), etafenone (19), propafenone (29)
-afil inhibitors of phosphodiesterase PDE5 with vasodilator action

F.2.0.0 (USAN: PDE5 inhibitors)

(a) avanafil (92), beminalafil (90), dasantafil (91), gisadenafil (101), lodenafil carbonate (94), mirodenafil (95), sildenafil (75), tadalafil (85), udenafil (93), vardenafil (82)

-aj- antiarrhythmics, ajmaline derivatives

H.2.0.0

(a) detajmium bitartrate (34), lorajmine (34), prajmalium bitartrate (23)

-al (d) aldehydes

-aldrate antacids, aluminium salts

N.5.2.0

(a) carbaldrate (53), potassium glucaldrate (14), magaldrate (49), simaldrate (15), sodium glucaspaldrate (17)

algedrate (15), almadrate sulfate (15), almagodrate (52)

(c) alexitol sodium (45), almagate (41), almasilate (43), dosmalfate (75), glucalox (13), hydrotalcite (23), lactaldfate (53), sucralox (13)

-alol see -olol

-alox see -ox

-amivir see -vir
ampanel antagonists of the ionotropic non-NMDA (N-methyl-D-aspartate) glutamate receptors (Namely the AMPA (amino-hydroxymethyl-isoxazole-propionic acid) and/or KA (kainite antagonist) receptors)

B.0.0.0 (USAN: ionotropic non-NMDA glutamate receptors (AMPA and/or KA receptors) antagonists)

(a) becampanel (90), dasolampanel (105), fanapanl (80), irampanel (82), perampanel (97), selurampanel (104), talampanel (80), tezampanel (95), zonampanel (85)

andr (d) steroids, androgens

Q.2.3.0 (USAN: -andr- androgens)

(a)  i. _andr_: androstanolone (4), methandriol (1), nandrolone (22), norethandrolone (6), ovandrotone albumin (52), silrandrone (18)

i. _-stan- (d):_ androstanolone (4), drostanolone (13), epitiostanol (31), mestanolone (10), stanozolol (18), epostane (51) (contraceptive)

iii. _-ster- (d):_ calusterone (23), cloxotestosterone (12), fluoxymesterone (6), mesterolone (15), methyltestosterone (4), oxymesterone (12), penmesterol (14), prasterone (23), testosterone (4), testosterone ketolaurate (16), tiomesterone (14)

(b) i. _andr_: oxandrolone (12), propetandrol (13)

ii. _ster_: aldosterone (6), bolasterone (13), dihydrotachysterol (1), dimethisterone (8), ethisterone (4), norethisterone (6), norvinisterone (6), stercuronium iodide (21) (neuromuscular blocking agent)

(c) metandieonone (12), oxymetholone (11), trestolone (25) (antineoplastic androgen)

-anib angiogenesis inhibitors

L.0.0.0

(a) beloranib (100), bevasiranib (108), brivanib alaninate (97), cediranib (95), crenolanib (105), motesanib (97), nintedanib (105), linifanib (102), lucitanib (107), pazopanib (94), pegaptanib (88), pegdinetanib (103), semaxanib (85), tivozanib (102), toceranib (100), trebananib (106), vandetanib (91), vatalanib (84)
INN – The use of stems

-anide

-etanide
diuretics, piretanide derivatives

N.1.2.0
(USAN: diuretics (piretanide type))

\[
\begin{align*}
\text{NH}_2 & \quad \text{O} \\
\text{O} & \quad \text{CO}_2\text{H} \\
\text{ } & \quad \text{ } \\
\text{R} & \quad \text{ } \\
\text{Ph} & \quad \text{ } \\
\end{align*}
\]

(a) bumetanide (24), piretanide (33)

(c) besunide (30)

-oxanide
antiparasitics, salicylanilides and analogues

S.3.0.0
(USAN: antiparasitics (salicylanilide derivatives))

\[
\begin{align*}
\text{O} & \quad \text{N} \\
\text{H} & \quad \text{O} \\
\text{H} & \quad \text{ } \\
\text{Ph} & \quad \text{ } \\
\end{align*}
\]

(a) bromoxanide (31), clioxanide (19), rafoxanide (24)

-thioanalogues: brotianide (24)

related: diloxanide (8), nitazoxanide (45)

(b) closantel (36), flurantel (25), niclosamide (13), resorantel (23), salantel (29)

(c) oxyclozanide (16)

other –anides: aurothioglycanide (1) (antiarthritic; gout-remedy), ceforanide (39) (antibiotic), oglufanide (86) (immunomodulator), polihexanide (24) (antibacterial), tiprostanide (48) (antihypertonic)

-anserin
serotonin receptor antagonists (mostly 5-HT$_2$)

C.7.0.0
(USAN: serotonin 5-HT$_2$ receptor antagonists)

(a) adatanserin (70), altanserin (50), blonanserin (76), butanserin (51), eplivanserin (80), fananserin (69), fibanserin (75), iferanserin (89), ketanserin (46), lidanserin (62), nelotanserin (101), pelanserin (57), pimavanserin (97), pruvanserin (90), seganserin (56), trelanserin (97), tropanserin (55), volinanserin (95)
(b) serotonin receptor antagonists, psychoactive: cinanserin (17), gle\nmanserin (68), mianserin (20), ritanserin (51)

-antel anthelmintics (undefined group)

S.3.1.0

(a) amidantel (40), carbantel (35), closantel (36), derquantel (99), epsiprantel (57), febantel (38), flurantel (25), monepantel (98), morantel (22), oxantel (31), pexantel (22), praziquantel (34), pyrantel (17), resorantel (23), salantel (29), zilantel (33), antelmypcin (15)

-antrone antineoplastics; anthraquinone derivatives

L.0.0.0/ L.5.0.0

(a) ametantrone (45), banoxantrone (90), butantrone (49), ledoxantrone (76), losoxantrone (68), mitoxantrone (44), nortopixantrone (87), piroxantrone (59), pixantrone (89), sepantronium bromide (105), teloxantrone (68), topixantrone (87)

-apine see -pine

-(ar)abine arabinofuranosyl derivatives

L.4.0.0/
S.5.3.0 (USAN: -arabine: antineoplastic (arabinofuranosyl derivatives))

(a) clofarabine (90), cytarabine (14), fazarabine (56), fludarabine (48), nelarabine (80), vidarabine (23)
See also the stem -citabine: ancitabine (36), apricitabine (95), capecitabine (73), decitabine (61), dexelvucitabine (95), elvucitabine (89), emtricitabine (80), enocitabine (46), fiaclitabine (59), fluocitabine (38), galocitabine (65), gemcitabine (62), ibacitabine (57), mercitabine (108), sapacitabine (94), tezacitabine (84), torcitabine (87), troxacitabine (81), valopicitabine (93), valtorcitabine (90), zalcitabine (66)

(c) ribavirin (31), taribavirin (95)
-arit  
antiarthritic substances, acting like clobuzarit and lobenzarit (mechanism different from anti-inflammatory type substances, e.g. -fenamates or -profens)  
A.4.2.0  
(USAN: antirheumatic (lobenzarit type))

(a) actarit (62), bindarit (64), clobuzarit (44), lobenzarit (46), romazarit (60)  
(c) tarenflurbil (97)

-arol (d)  
anticoagulants, dicoumarol derivatives  
I.2.1.0  
(USAN: anticoagulants (dicoumarol type))

(a) acenocoumarol (6), clocoumarol (31), coumetarol (13), dicoumarol (23), tiocloamarin (31), xylocoumarol (15)  
(b) cloridarol (29) (coron. vasodil.), fluindarol (16) (anticoag. of indonedione-type)  
(c) diarbarone (15), ethyl biscoumacetate (4), phenprocoumon (11), tectarfarin (101), warfarin (23)

-arone  
(USAN: antiarrhythmics)  
amiodarone (16) (antiarrhythmic), benzarone (13), benzbromarone (13) (uricosuric), benziodarone (11), brinazarone (64) (calcium channel blocker), bucromarone (48) (antiarrhythmic), budiodarone (101), celivarone (94), diarbarone (15), dronedarone (75) (antianginal, antiarrhythmic), etabenzarone (17), fantofarone (65) (calcium channel blocker), furidarone (19), inicarone (27), mecinarone (30), pyridarone (16), rilozarone (58)

-arotene  
arotinoid derivatives  
P.1.0.0

(a) adarotene (100), amsilarotene (98), betacarotene (38), bexarotene (80), etarotene (64), linarotene (65), mofarotene (70), palovarotene (99), sumarotene (64), tamibarotene (73), tazarotene (72), temarotene (54), trifarotene (107)
arte-

antimalarial agents, artemisinin related compounds

S.3.3.0

(a) artemefenomel (109), arteflene (70), artemether (61), artemisone (95), artemisinin (56), artemotil (80), artemimol (81), arterolane (97), artesunate (61)

-ase enzymes

W.0.0.0

(a) agalsidase alfa (84), agalsidase beta (84), alglucerase (68), alglucosidase alfa (91), brinase (22), asfotase alfa (104), bucelipase alfa (95), calaspargase pegol (105), cocarboxylase (1), condoliase (106), crisantaspase (107), dornase alfa (70), elosulfase alfa (108), eufauserase (84), galsulfase (92), glucarpidase (92), hyalosidase (50), hyaluronidase (1), idursulfase (90), kallidinogenase (22), ocrase (28), pegaspargase (64), penicillinase (10), promelase (47), rizolipase (22), sfericase (40), streptodornase (6), streptokinase (6), tilactase (50), urokinase (48)

(c) batroxobin (29), bromelains (18), chymopapain (26), chymotrypsin (10), defibrotide (44), fibrinolysin (human) (10), orgotein (31), sutilains (18), ubidecarenone (48)

Classification of enzymes

I proteinase

(a) with -ase suffix:

<table>
<thead>
<tr>
<th>INN</th>
<th>origin</th>
<th>use, action</th>
</tr>
</thead>
<tbody>
<tr>
<td>crisantaspase</td>
<td>Erwinia chrysanthemi</td>
<td>asparaginase</td>
</tr>
<tr>
<td>brinase</td>
<td>Aspergillus oryzae</td>
<td>fibrinolytic</td>
</tr>
<tr>
<td>calaspargase</td>
<td>Escherichia coli</td>
<td>asparaginase</td>
</tr>
<tr>
<td>kallidinogenase</td>
<td>pancreas or urine of mammals</td>
<td>splitting kinin, kallidin from kininogen (vasodilator)</td>
</tr>
<tr>
<td>ocrase</td>
<td>Aspergillus ochraceus</td>
<td>fibrinolytic (topically: cleaning wounds)</td>
</tr>
<tr>
<td>pegaspargase</td>
<td></td>
<td>asparaginase</td>
</tr>
<tr>
<td>promelase</td>
<td>Aspergillus melleus</td>
<td>proteinase (chronic bronchitis)</td>
</tr>
<tr>
<td>Enzyme Name</td>
<td>Source</td>
<td>Function</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>----------</td>
</tr>
<tr>
<td>serrapeptase (31)</td>
<td><em>Serratia sp. E15</em></td>
<td>proteinase (chronic paranasal sinusitis etc.)</td>
</tr>
<tr>
<td>sfericase (40)</td>
<td><em>Bacillus sphaericus</em></td>
<td>proteinase (chronic paranasal sinusitis etc.)</td>
</tr>
<tr>
<td>streptokinase (6)</td>
<td><em>Streptococcus haemolyticus</em></td>
<td>changing plasminogen into plasmine (activator of fibrinolysis)</td>
</tr>
<tr>
<td>urokinase (48)</td>
<td>human origin</td>
<td>plasminogen activator</td>
</tr>
<tr>
<td>urokinase alfa (27)</td>
<td>recombinant material</td>
<td>plasminogen activator</td>
</tr>
</tbody>
</table>

(c) **without -ase suffix:**

<table>
<thead>
<tr>
<th>Enzyme Name</th>
<th>Source</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>batroxobin (29)</td>
<td>the venom of the serpent <em>Bothropsatrox</em></td>
<td>thrombin like enzyme</td>
</tr>
<tr>
<td>bromelains (18)</td>
<td><em>Ananas comosus</em> Merr.</td>
<td>fibrin depolymerizing (anti-inflammatory)</td>
</tr>
<tr>
<td>chymopapain (26)</td>
<td>papaya late</td>
<td>proteolytic (chymonucleosis)</td>
</tr>
<tr>
<td>chymotrypsin (10)</td>
<td>mammalian pancreas</td>
<td>proteolytic (anti-inflammatory, anti-oedema)</td>
</tr>
<tr>
<td>defibrotide (44)</td>
<td>mammalian pancreas</td>
<td>proteolytic (anti-inflammatory, anti-oedema)</td>
</tr>
<tr>
<td>fibrinolysin (human) (10)</td>
<td>human</td>
<td>fibrinolytic</td>
</tr>
<tr>
<td>sutilains (18)</td>
<td><em>Bacillus subtilis</em></td>
<td>proteolytic</td>
</tr>
</tbody>
</table>

---

**II**

- **lipase**

<table>
<thead>
<tr>
<th>Enzyme Name</th>
<th>Source</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>bucelpase alfa (95)</td>
<td>human origin</td>
<td>lipase</td>
</tr>
<tr>
<td>rizolipase (22)</td>
<td><em>Rhizopus arrhizus</em> var. Delemar</td>
<td>lipase</td>
</tr>
</tbody>
</table>

---

**III**

**co-enzymes**

(a) cocarboxylase (1) | chemically defined | co-enzyme in the metabolism of pyruvic acid |

(c) ubidecarenone (48) | chemically defined | naturally occurring co-enzyme, a component in the electron transfer system in mitochondria (congestive heart failure) |
### IV  
**-dismase** enzymes with superoxide dismutase activity  
(USAN: superoxide dismutase activity (exception: orgotein))  

(a) ledismase (70), sudismase (58)  
(c) isomerase  
    orgotein (31) mammalian tissue (liver, red blood cell etc.) superoxide dismutase activity (anti-inflammatory)  
    pegorgotein (72)  

### V  
**-diplase** plasminogen activator combined with another enzyme  

amediplase (79)  

### VI  
**-teplase** tissue-type plasminogen activators  

(a) alteplase (59), desmoteplase (80), duteplase (62), lanoteplase (76), monteplase (71), nateplase (73), pamiteplase (78), reteplase (69), silteplase (65), tenecteplase (79)  
(c) anistreplase (59)  

### VII  
**-uplase** urokinase-type plasminogen activators  

(a) nasaruplase (68), nasaruplase beta (85), saruplase (58)  

### VIII  
**others**  

- agalsidase alfa (84) human origin treatment of deficiency of alpha-galactosidase activity (Fabry’s disease)  
- agalsidase beta (84) hamster treatment of deficiency of alpha-galactosidase activity (Fabry’s disease)  
- alfimeprase (85) *Agkistrodon contorix contorix* antithrombotic  
- alglucerase (68) human origin (placenta isoenzyme) glucocerebrosidase  
- alglucosidase alfa (91) recombinant treatment of Pompe’s disease  
- asfotase alfa (104) recombinant phosphatase  
- condoliase (106) *Proteus vulgaris* endolyase  
- dornase alfa (70) human origin treatment of cystic fibrosis
<table>
<thead>
<tr>
<th>Enzyme Name</th>
<th>Origin/Type</th>
<th>Function/Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>elosulfase alfa (108)</td>
<td>CHO cells</td>
<td>N-acetylgalactosamine-6-sulfatase</td>
</tr>
<tr>
<td>epafipase (85)</td>
<td>human origin</td>
<td>antiallergic, antiasthmatic</td>
</tr>
<tr>
<td>eufauserase (84)</td>
<td>Euphausia superba</td>
<td>digests proteins and selected cell surface adhesion molecules (wound healing; vaginal/oral candidosis)</td>
</tr>
<tr>
<td>galsulfase (92)</td>
<td>recombinant</td>
<td>Maroteaux-Lamy syndrome</td>
</tr>
<tr>
<td>glucarpidase (92)</td>
<td>Pseudomonadacea gen. sp.</td>
<td>adjunctive treatment of patients at risk of methotrexate toxicity</td>
</tr>
<tr>
<td>hyalosidase (50)</td>
<td>recombinant</td>
<td>hyaluronoglucosaminidase (treatment of myocardial infarction)</td>
</tr>
<tr>
<td>hyaluronidase (1)</td>
<td>various origins</td>
<td>depolymerizing hyaluronic acid (cellular diffusion factor)</td>
</tr>
<tr>
<td>idursulfase (90)</td>
<td></td>
<td>treatment of Hunter Syndrome (Mucopolysaccharidosis Type II), degrades glycosaminoglycans heparan and dermatan sulfate</td>
</tr>
<tr>
<td>imiglucerase (72)</td>
<td>human origin (placenta isoenzyme)</td>
<td></td>
</tr>
<tr>
<td>laronidase (85)</td>
<td>human origin</td>
<td></td>
</tr>
<tr>
<td>pegademase (63)</td>
<td>Origin should be indicated</td>
<td></td>
</tr>
<tr>
<td>pegadricase (105)</td>
<td>Candida utilis</td>
<td>urate oxidase</td>
</tr>
<tr>
<td>peglottiecase (98)</td>
<td>Sus scrofa</td>
<td>uricase</td>
</tr>
<tr>
<td>penicillinase (10)</td>
<td>Bacillus cereus</td>
<td>inactivating penicillin</td>
</tr>
<tr>
<td>ranpimase (81)</td>
<td>Rana pipiens</td>
<td>ribonuclease (antineoplastic)</td>
</tr>
<tr>
<td>rasburicase (81)</td>
<td>Aspergillus flavus</td>
<td>urate oxidase (hyperuricaemia)</td>
</tr>
<tr>
<td>streptodornase (6)</td>
<td>Streptococcus haemolyticus</td>
<td>hydrolysing desoxyribonucleoprotein beta-glucocerebrosidase</td>
</tr>
<tr>
<td>taliglucerase alfa (101)</td>
<td>recombinant</td>
<td>beta-glucocerebrosidase</td>
</tr>
<tr>
<td>tilactase (50)</td>
<td></td>
<td>β-D-glactosidase</td>
</tr>
<tr>
<td>velaglucerase alfa (98)</td>
<td></td>
<td>beta-glucocerebrosidase</td>
</tr>
<tr>
<td>Stem</td>
<td>Description</td>
<td>BAN; USAN</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>----------</td>
</tr>
<tr>
<td>-ast (x)</td>
<td>antiasthmatics or antiallergics, not acting primarily as antihistaminics</td>
<td></td>
</tr>
<tr>
<td>K.0.0.0</td>
<td>(BAN: antiasthmatics, antiallergics when not acting primarily as antihistamines) (USAN: antiasthmatics / antiallergics: not acting primarily as antihistamines)</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>acitazanolast (72), acreozast (77), andolast (67), asobamast (63), ataquimast (82), bamaquimast, (76), batebulast (66), bunaprolast (60), dametralast (54), dazoquinast (54), doqualast (48), eflumast (61), enofelast (67), enoxamast (52), fenprinast (48), filaminast (75), ibudilast (58), idenast (58), loxanast (46), melquinast (62), oxalinast (49), pemirast (61), picumast (47), pirodomast (64), quinotolast (64), raxofelast (68), repirinast (55), revenast (51), scopinast (76), suplatast tosylate (64), tazanolast (59), ticrilast (52), tibenelast (58), tioxamast (53), tiprinast (50), tranilast (46), zaprinast (46)</td>
<td></td>
</tr>
<tr>
<td>-lukast</td>
<td>leukotriene receptor antagonists</td>
<td>USAN</td>
</tr>
<tr>
<td>(a)</td>
<td>ablukast (61), cinalukast (70), iralukast (70), masilukast (94), montelukast (73),obilukast (70), pranlukast (67), ritolukast (64), sulukast (63), tipelukast (95), tolukast (59), verlukast (65), zafirlukast (71)</td>
<td></td>
</tr>
<tr>
<td>-milast</td>
<td>phosphodiesterase IV (PDE IV) inhibitors</td>
<td>USAN</td>
</tr>
<tr>
<td>(a)</td>
<td>apremilast (97), catramilast (95), cilomilast (82), lirimilast (86), oglemilast (94), piclamilast (73), revamilast (102), roflumilast (77), elbimilast (107), tetomilast tofimilast (91)</td>
<td></td>
</tr>
<tr>
<td>-tegrast</td>
<td>integrin antagonists</td>
<td>USAN</td>
</tr>
<tr>
<td>(a)</td>
<td>carotegrast (102), firategrast (96), lifitegrast (107), valategrast (93), zaurategrast (101)</td>
<td></td>
</tr>
<tr>
<td>-trodst</td>
<td>thromboxane A2 receptor antagonists, antiasthmatics</td>
<td>USAN</td>
</tr>
<tr>
<td>(a)</td>
<td>imitrodast (70), seratrodast (70)</td>
<td></td>
</tr>
<tr>
<td>-zolast</td>
<td>leukotriene biosynthesis inhibitors</td>
<td>USAN</td>
</tr>
<tr>
<td>(a)</td>
<td>binizolast (60), eclazolast (55), ontazolast (72), quazolast (55), tetrazolast (67)</td>
<td></td>
</tr>
<tr>
<td>(c)</td>
<td>bufrolin (34), oxarbazole (38), pirolate (44)</td>
<td></td>
</tr>
<tr>
<td>-astine (x)</td>
<td>antihistaminics</td>
<td></td>
</tr>
<tr>
<td>G.2.0.0</td>
<td>(BAN: antihistamines, not otherwise classifiable) (USAN: antihistaminics (histamine-H$_1$ receptor antagonists))</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>acrivastine (51), alinastine (74), azelastine (36), bamirastine (91), barmastine (59), bepiastine (19), bepotastine (78), bilastine (82), cabastinen (50), carebastine (52), clemastine (22), dorastine (23), ebastine (52), emedastine (59), epinastine (55),</td>
<td></td>
</tr>
</tbody>
</table>
flezelastine (67), levocabastine (50), linetastine (74), mapinastine (72), mizolastine (64), moxastine (15), noberastine (59), octastine (37), perastine (15), piclopastine (22), rocstone (57), setastine (39), talastine (18), temelastine (54), zepastine (26)

(b) cloperastine (18) (antitussive), vinblastine (12) (vinca-alkaloid)

(c) astemizole (45), carboxoline (4)

- azam  see - azepam

-azenil  benzodiazepine receptor antagonists/agonists (benzodiazepine derivatives)

(a) bretazenil (60), flumazenil (55), iomazenil $^{123}$I (66), sarmazenil (59)

(b) nabazenil (49)

-carnil  benzodiazepine receptor antagonists/agonists (carboline derivatives)

(a) abecarnil (60), gedocarnil (61)

-quinil  benzodiazepine receptor agonists, also partial or inverse (quinoline derivatives)

(a) lirequinil (72), radequinil (93) (replaces resequin (90)), terbequinil (63)

-azepam (x)  diazepam derivatives

(b) bromazepam (22), camazepam (30), carburazepam (39), cinolazepam (46), clonazepam (22), cyprazepam (16), delorazepam (40), diazepam (12), doxefazepam (43), elfazepam (36), fletazepam (31), fludiazepam (36), flunitrazepam (24), flurazepam (20),
flutemazepam (58), flutoprazepam (45), fosazepam (27), halazepam (29), iclazepam (37), lorazepam (23), lormetazepam (38), meclonazepam (44), medazepam (20), menitrazepam (22), metaclazepam (46), motrazepam (31), nimetazepam (26), nitrazepam (16), nordazepam (39), nortetrazepam (20), oxazepam (13), pinazepam (32), pivoxazepam (34), prazepam (14), profazepam (31), quazepam (36), reclazepam (53), sulazepam (14), temazepam (22), tetrazepam (17), tolufazepam (51), tuclazepam (40), uldazepam (30)

not true benzodiazepines: bentazepam (33), clotiazepam (30), lopirazepam (36), premazepam (45), ripazepam (33), zolazepam (28)

related: adinazolam (45), alprazolam (30), arfendazam (39), clazolam (29), climazolam (51), clobazam (25), clobenzepam (25), cloxazolam (29), ecopipam (80), estazolam (31), flutazolam (32), haloxazolam (38), ketazolam (26), levotofisopam (92), lofendazam (36), loprazolam (44), mexazolam (40), midazolam (40), nefopam (25), oxazolam (25), razobazam (52), remimazolam (102), tofisopam (26), triazolam (30), triflubazam (28), zapizolam (43), zomebazam (49)

(c) brotizolam (40), chlordiazepoxide (11), ciclotizolam (40), demoxepam (23), dipotassium clorazepate (17), ethyl carfluzepate (43), ethyl dirazepate (44), ethyl loflazepate (43), etizolam (40), potassium nitrazepate (17)

not related: anxiolytic: fenobam (36), muscle relax.: xilobam (36)

---

**-azepide**

**cholcystokinin receptor antagonists, benzodiazepine derivatives**

J.1.0.0 (USAN: cholcystokinin receptor antagonists)

(a) devazepide (62), pranazepide (75), netazepide (106), tarazepide (68)

(c) lorglumide (56)

---

**-azocine**

**narcotic antagonists/agonists related to 6,7-benzomorphan**

A.4.1.0 (USAN: narcotic antagonists/agonists, 6,7-benzomorphan derivatives)

(a) anazocine (30), bremazocine (43), butinazocine (53), carbazocine (16), cogazocine (36), cyclazocine (14), eptazocine (45), gemazocine (29), ibazocine (36), ketazocine (34), metazocine (9), moxazocine (38), pentazocine (14), phenazocine (9), quadazocine (54), tonazocine (46), volazocine (19)

(b) streptozocin (33)
-azolam  see -azepam

-azoline  antihistaminics or local vasoconstrictors, antazoline derivatives
E.4.0.0 (USAN: antihistamines/local vasoconstrictors (antazoline type))

(a) antazoline (1), cilutazoline (61), cirazoline (38), clonazoline (18), coumazoline (26),
domazoline (30), fenoxazoline (12), indanalazine (42), metrazoline (33), naphazoline (1),
nemazoline (63), oxymetazoline (13), phenazoline (6), prazoline (22), talazoline (01),
tefazoline (24), tinazoline (39), tramazoline (15), xylometazoline (8)
(b) cefazolin (25) (antibiotic)
(c) tetryzoline (6), metizoline (22)

-azone  see -buzone

-azosin  antihypertensive substances, prazosin derivatives
H.3.0.0 (USAN: antihypertensives (prazosin type))

(a) bunazosin (50), doxazosin (47), neldazosin (60), prazosin (22), quinazosin (17), terazosin
(44), tiodazosin (41), trimazosin (31)
related: alfuzosin (49), tamsulosin (65), tipentosin (55)

-bacept  see -cept

-bactam  β-lactamase inhibitors
S.6.5.0
(a) brobactam (53), sulbactam (44), tazobactam (60)
(c) clavulanic acid (44)
-bamate  
tranquillizers, propanediol and pentanediol derivatives  

C.1.0.0  
(USAN: tranquilizers/antiepileptics (propanediol and pentanediol groups))

\[
\begin{align*}
\text{NH}_2 & \text{O} \text{O} \text{O} \text{NH} \\
\text{NH}_2 & \text{O} \text{O} \text{O} \text{NH}
\end{align*}
\]

(a) carisbamate (96), cyclarbamate (13), felbamate (54), meprobamate (6), nisobamate (21), pentabamate (13), tybamate (14)

(b) difebarbamate (16), febarbamate (12), lorbamate (24), phenprobamate (10)

(c) mebutamate (12), metaglycodol (12) (not a carbamate)

-barb (d)  
hypnotics, barbituric acid derivatives  

A.2.1.0  
(BAN: -barb, -barb-: for barbiturates)  
(USAN: -barb; or -barb-: barbituric acid derivatives)

\[
\begin{align*}
\text{R} & \text{N} \text{H} \\
\text{O} & \text{O} \\
\text{R} & \text{N} \text{H}
\end{align*}
\]

(a) allobarbital (1), amobarbital (1), aprobarbital (1), barbexaclone (16), barbital (4), barbital sodium (4), benzobarbital (25), brallobarbital (41), carbubarb (14), cyclobarbital (1), difebarbamate (16), etrobarb (32), febarbamate (12), heptabarb (14), hexobarbital (1), methylphenobarbital (1), nealbarbital (11), pentobarbital (1), phenobarbital (4), phenobarbital sodium (4), probarbital sodium (1), proxibarbal (33), secbutabarbital (12), secobarbital (4), tetrabarbital (4), thialbarbital (4), thiotetramebarbital (4), vinbarbital (1)

(c) butalbital (4), buthalital sodium (8), metharbital (1), methitural (6), methohexital (8), phetharbital (10), talbutal (17), thiopental sodium (4), vinylbital (12)

(c) prazitone (19) (barbituric acid derivative used as antidepressive), bucolome (17) (barbituric acid derivative used as anti-inflammatory uricosuric)

-begron  
β3-adrenoreceptor agonists  

M.3.2.1

(a) amibegron (94), fasobegron (98), lubabegron (109), mantabegron (88), mirabegron (98), rafabegron (88), ritobegron (91), solabegron (90), talibegron (86), vibegron (108)
-benakin  see -kin

-bendan  see -dan

-bendazole  anthelminthics, tiabendazole derivatives
S.3.1.0  (USAN: anthelmintics (tiabendazole type))

(a)  albendazole (35), albindazole oxide (56), bisbendazole (29), cambendazole (24),
ciclobendazole (31), dribendazole (49), etibendazole (49), fenbendazole (29), flubendazole
(34), lobendazole (28), luxabendazole (52), mebendazole (24), oxibendazole (30),
parbendazole (19), subendazole (31), tiabendazole (13), triclabendazole (45)

(b)  bendazol (12) (vasodilator, also benzimidazole derivative)
L.0.0.0: nocodazole (36), procodazole (36) (also benzimidazole derivative)

(c)  oxfendazole (35), tioxidazole (39)
related: furodazole (37) (S.3.1.0)

-bercept  see -cept

-bermin  see -ermin

-betasol  see pred

-bersat  anticonvulsants, benzoylamino-benzpyran derivatives
A.3.1.0  (USAN: anticonvulsants; antimigraine (benzoylamino-benzpyran derivatives))

(a)  carabersat (85), tidembersat (84), tonabersat (85)

bol (x)  anabolic steroids
M.4.1.0  (BAN: steroids, anabolic)
(USAN: bol- or -bol- : anabolic steroids)

(a)  bolandiol (16), bolasterone (13), bolazine (21), boldenone (20), bolenol (19), bolmantalate
(16), clostebol (22), enestebol (22), furazabol (16), mebolazine (21), mibolerone (27),
norboleton (15), norclostebol (22)
-bolone: formebolone (31), mesabolone (29), metribolone (17), oxabolone cipionate (14),
quinalbolone (14), roxibolone (40), stenbolone (17), tibolone (22), trenbolone (24)
(c) ethylestrenol (13), hydroxystenozole (10), metandienone (12), metenolone (12), oxandrolone (12), propetandrol (13), tiomesterone (14)

-bradine  bradycardic agents

H.0.0.0

(a) cilobradine (63), ivabradine (75), zatebradine (62)

-brate  see -fibrate

-bufen  non-steroidal anti-inflammatory agents, arylbutanoic acid derivatives

A.4.2.0  (USAN: non-steroidal anti-inflammatory agents, fenbufen derivatives)

(a) butibufen (32), fenbufen (30), furobufen (30), indobufen (39), metbufen (43)

-bulin  antineoplastics; mitotic inhibitors, tubulin binders

L.0.0.0

(a) batabulin (90), cevipabulin (96), crolibulin (104), denibulin (95), eribulin (97), fosbretabulin (100), indibulin (91), lexibulin (105), mivobulin (77), ombrabulin (99), plinabulin (102), rosabulin (95), taltobulin (91), verubulin (103)

(b) thyro globulin (26)

-butazone  see -buzone

-buzone  anti-inflammatory analgesics, phenylbutazone derivatives

A.4.2.0

(a) feclobuzone (27), kebuzone (19), pipebuzone (25), suxibuzone (24), tribuzone (33)

-butazone  (USAN: anti-inflammatory analgesics (phenylbutazone type))

mofebutazone (15), oxyphenbutazone (8), phenylbutazone (1)
INN – The use of stems

-azone
aminophenazone (13), bisfenazone (33), famprofazone (21), morazone (12), nifenazone (15), nimazone (20), niprofazone (29), phenazone (4), propyphenazone (1), sulfapirzone (8)

-zone
clofezone (17), proxifezone (24)

related: azapropazone (18), benhepazone (15), bumadizone (24), cinnopentazone (17), isamfazone (37), metamfazone (12), osmadizone (26), ruvazone (26)

(c) benzpiperylone (12), butopyrammonium iodide (8), dibupyrone (17), metamizole sodium (53), metazamide (16), piperylone (11)

-caine (x) local anaesthetics

E.0.0.0

(a) ambucaine (6), amoxecaine (1), aptocaine (21), articae (47) (previously carticaine (27)), benzocaine (42), betoxycaine (13), bucricaene (49), bumecaine (25), bupivacaine (17), butacaine (4), butanilicaine (16), chloroprocaene (6), cinchoeacine (1), clibucaine (14), clodacaine (13), clormecaine (17), cyclomethycaine (6), dexivacaine (20), dialocaine (22), edronocaine (84), elucaine (29), etidocaine (29), fexicaine (25), fomocaine (18), hexylcaine (4), hydroxyprocaine (1), hydrogen'tetraeoacine (1), ipravacaine (85), ketocaene (15), leucinocaine (17), levobupivacaine (74), lidocaine (1), lutucaine (27), mepivaene (11), mepyrcaine (4), myrtecaene (15), octacaine (14), oxetacaine (13), oxybuprocaene (8), parethoxycaene (l), paridocaine (8), phenacaine (4), pinolcaine (32), pipercaine (l), piridocaine (l), premicaine (4), pribecaine (32), prilocaine (14), procaine (10), propanocaine (6), propipocaine (16), propoxycaene (4) proxetmacaine (6), pyrocaine (13), quatacaine (18), quinisocaine (4), risocaine (26), rodocaine (27), ropivacaine (50), tetracaine (4), tollycaine (16), trapencaine (56), trimecaine (11), vadocaine (57)

(c) amolanone (6), benzyl alcohol (l), croyofluorane (6), diprerdon (l), dyclonine (6), midamaline (6)

-cain- (x) Class I antiarrhythmics, procainamide and lidocaine derivatives

H.2.0.0 (BAN: antifibrillants with local anaesthetic activity)

(a) acecainide (39), asocainol (47), barucainide (52), bucainide (35), carciniam chloride (36), carocainide (46), droxicainide (47), encainide (40), epicainide (40), erocainide (50), flecainide (37), guafecainol (38), indecainide (48) (originally ricainide (47)), itrocaenide (54), ketocainol (32), lorcaenide (38), milacainide (77), modecainide (63), murocainide (46), nicainoprol (46), nofcaenide (44), pilacicaine (62), pinecaine (49), procaenamide
(1), quinacainol (50), recainam (54), solpecainol (55), stirocainide (47), suricainide (55),
tocainide (36), transcainide (51), (verocainine (42) - replaced by tiapamil in List 43),
zocainone (41)

---

**calci**  
**Vitamin D analogues/derivatives**

N.8.0.0  
(USAN: calci- or -calci-: Vitamin D analogues)

![Chemical structure of Vitamin D analogues](image)

(a) alfacalcidol (40), atocalcitol (88), becocalcidol (92), calcifediol (26), calcipotriol (61),
calcitriol (39), colecalciferol (13), doxercalciferol (82), ecaldincene (85), eldecalcitol (97),
elocalcitol (95), ergocalciferol (13), falecalcitriol (74), inecalcitol (87), lexacalcitol (71),
lunacalcipol (102), maxacalcitol (75), paricalcitol (78), pefcalcitol (107), secalciferol (62),
seocalcitol (78), tacalcitol (65)

(b) calcitonin (31) (polypeptide)

(c) dihydrotachysterol (1)

---

**-capone**  
catechol-**O**-methyltransferase (COMT) inhibitors

entacapone (65), nebicapone (96), nitecapone (62), opicapone (103), tolcapone (66)

---

**-carbef**  
**antibiotics, carbacephem derivatives**

S.6.1.0

(a) loracarbef (60)

---

**-carnil**  
see -azenil

---

**-castat**  
see -stat

---

**-cavir**  
see vir
cef- (x)  antibiotics, cefalosporanic acid derivatives

S.6.1.0  (USAN: cephalosporins)

\[
\begin{align*}
\text{N} & \quad \text{O} \\
\text{CO}_2\text{H} & \quad \text{R}' \\
\text{H} & \quad \text{R} \\
\text{H} & \quad \text{N}
\end{align*}
\]

(a)  cefacetrile (25), cefaclor (36), cefadroxil (33), cefalexin (18), cefaloglycin (16), cefalonium (16), cefaloram (16), cefaloridine (15), cefalotin (14), cefamandole (30), cefaparole (33), cefapirin (23), cefatrizine (34), cefazaflur (36), cefazedone (36), cefazolin (25), cefbuperazone (48), cefcanel (60), cefcanel daloxate (59), cefcapene (68), cefclidin (64), cefdaloglycin (64), cefdinir (61), cefditoren (66), cefedrolor (53), cefemipidone (58), cefepime (57), cefetamet (49), cefetecol (63), cefetizole (44), cefivitril (52), cefixime (53), cefluirenam (71), cefmatilen (81), cefmenoxime (44), cefmenpidium chloride (57), cefmetazol (39), cefminox (53), cefodizime (44), cefonicid (42), cefoperazone (42), ceforanide (39), cefoselis (71), cefotaxime (42), cefotetan (48), cefotiam (40), cefovecin (87), cefofoxazole (34), cefoxitin (29), cefozopran (66), cefpimizole (50), cefpiramide (47), cefpirome (50), cefpodoxime (58), cefprozil (62), cefquinome (59), cefradine (26), cefrotile (34), cefroxadine (42), cefsulodin (38), cefsumide (38), ceftraroline fosamil (97), ceftrazidime (44), cefteram (55), ceftezole (34), ceftributen (60), ceftehydroxyl (53), ceftofivale (49), ceftioxone (43), ceftriaxone (59), ceftriaxone alapivoxil (77), ceftricoproline (92), ceftrizole (105), ceftriadone (44), cefuracetam (45), cefuroxime (34), cefuzonam (55)

-oxef  antibiotics, oxacefalosporanic acid derivatives

S.6.1.0  (USAN: antibiotic, oxacefalosporanic acid derivatives)

\[
\begin{align*}
\text{N} & \quad \text{O} \\
\text{CO}_2\text{H} & \quad \text{R}' \\
\text{H} & \quad \text{R} \\
\text{H} & \quad \text{N}
\end{align*}
\]

(a)  flomoxef (55), latamoxef (46)

cell- or  cellulose derivatives

cel-  [cel- in Spanish]

U.4.0.0

(a)  celucloral (40)

(c)  celiprolol (35)
cell-ate | cellulose ester derivatives for substances containing acidic residues  
| U.4.0.0 | [cel-ato in Spanish]  
| (a) | cellaburate (23), cellacefate (18)  
-cellose | cellulose ether derivatives  
| U.4.0.0 | [-celosa in Spanish]  
| (a) | -  
| (c) | carmellose (45), croscarmellose (48), ethylcellulose (80), hyetellose (80), hymetellose (80), hyprolose (80), hypromellose (18), methylcellulose (4)  

-cept | receptor molecules, native or modified (a preceding infix should designate the target)  
| S.7.0.0 |  
| (a) | -ba- B-cell activating factor receptors  
| | briobacet (98)  
| -ber- vascular endothelial growth factor (VEGF) receptors  
| | aflibercept (96), conbercept (105)  
| -co- complement receptors  
| | mirococept (91)  
| -far- subgroup of interferon receptors  
| | bifarcept (86)  
| -lefa- lymphocyte function-associated antigen 3 receptors  
| | alefacept (84)  
| -na- interleukin-1 receptors  
| | rilonacept (95)  
| -ner- Tumour Necrosis Factor (TNF) receptors  
| | baminercept (99), etanercept (81), lenercept (72), onercept (82), pegsunercept (87)  
| -ta- cytotoxic T lymphocyte-associated antigen 4 (CTLA-4) receptors  
| | abatacept (91), belatacept (93)  
| -ter- transforming growth factor receptors  
| | dalantercept (105), ramatercept (108), sotatercept (104)  
| -vir- antiviral receptors  
| | alvircept sudotox (69)  
| other: | atacicept (95), ipafricept (109)  

USAN
### -cic

**hepatoprotective substances with a carboxylic acid group**

USAN - J.1.2.0 (USAN: hepatoprotectives (timonacic group))

- limazocic (69), tidiacic (33), timonacic (33), (tiofacic (45) replaced by stepronin (46))
- bisorcic (34) (psychostimulant)
- stepronin (46)

### -ciclib

**cyclin dependant kinase inhibitors**

USAN - L.0.0.0
dinaciclib (102), milaciclib (105), palbociclib (109), rivaciclib (109), roniciclib (109), seliciclib (92), voruciclib (109)

### -ciclovir

see -vir

### -cidin

**naturally occurring antibiotics (undefined group)**

USAN - S.6.0.0 (USAN: natural antibiotics (undefined group))

- brilacidin (108), candidicidin (17), gramicidin (1), gramicidin S (26), methocidin (6)
- guancidine (18) (hypotensive)

### -ciguat

**guanylate cyclase activators and stimulators**

USAN - F.2.0.0 (USAN: guanidine cyclase activators)

- ataciguat (88), cinaciguat (97), etriciguat (88), lificiguat (95), nelociguat (105), riociguat (98), vericiguat (109)

### -cillide

see -cillin

### -cillin (x)

**antibiotics, 6-aminopenicillanic acid derivatives**

USAN - S.6.1.0 (USAN: penicillins)

- adicillin (14), almecillin (14), amantocillin (17), amoxicillin (27), ampicillin (13), apalcillin (39), aspoxicillin (50), azidocillin (19), azlocillin (36), bacampicillin (32), benethamine penicillin (1), benzathine benzylpenicillin (18), benzylpenicillin (53), carbenicillin (20), carfecillin (30), carindacillin (29), ciclacillin (22), clemizole penicillin (8), clometocillin (12), cloxacillin (13), dicloxacillin (16), epicillin (25), fenbenicillin (13), fibracillin (30),
flucloxacillin (17), fomodicillin (55), fumoxicillin (47), furbecillin (31), fuzlocillin (47), hetacillin (16), isopropicillin (12), lenampicillin (50), levopropicillin (12), metampicillin (20), meticillin (12), mezlocillin (34), nacillinn (13), oxacinillin (15), oxetacillin (33), penamecillin (16), pheneticillin (11), phenoxyacillin (6), phenyracillin (8), piperacillin (38), pirbenicillin (35), piridicillin (43), piroxicillin (49), pivampicillin (23), prazocillin (27), propicillin (13), quinacillin (14), rotamicillin (35), sarmoxicillin (41), sarpicillin (36), sulbenicillin (26), sultamicillin (48), suncillinn (25), talampicillin (31), tameticillin (35), temocillin (46), ticarcillin (29), tifencillinn (12), tobicillinn (78)

(b) xantocillin (12)

(c) penimepicycline (16), penimocycline (22)

-cillide
S.6.1.0 libecillide (32)

-cillinam
S.6.1.0 bacmeccillinn (38), meccillinn (32), pivmecillinn (32)

-cillinam see -cillin

-cilpine see -pine

-cisteine see -steine

-citabine nucleosides antiviral or antineoplastic agents, cytarabine or azacitidine derivatives

(USAN: nucleoside antiviral or antineoplastic agents, cytarabine or azarabine derivatives)

L.4.0.0/S.5.5.0

(a) ancitabine (36), apricitabine (95), capecitabine (73), decitabine (61), dextelvucitabine (95), elvucitabine (89), emtricitabine (80), enocitabine (46), fiacitabine (59), flurocitabine (38), galocitabine (65), gemcitabine (62), gemcitabine elaidate (106), ibacitabine (57), merricitabine (108), sapacitabine (94), tezacitabine (84), torcitabine (87), troxcitabine (81), valopicitabine (93), valtorcitabine (90), zalcitabine (66)

(c) cytarabine (14), azacitidine (40)
INN – The use of stems

-clidine/-clidinium  muscarinic receptors agonists/antagonists

E.1.0.0

aceclidine (13), benzoclidine (25), eticyclidine (44), gacyclidine (76),
phencyclidine (11), procyclidine (01), rolicyclidine (44), talsaclidine (72),
tenocyclidine (44), vedaclidine (76)
aclidinium bromide (100), clidinium bromide (06), droclidinium bromide (33)
umeclidinium bromide (106)

-clone  hypnotic tranquillizers

A.2.2.0  (USAN: hypnotics / tranquillizers (zopiclone type))

(a) barbexaclone (16), eszopiclone (87), pagoclone (74), pazinaclone (70), suproclone (46),
suriclone (43), suproclone (46), zopiclone (39)

(b) gestaclone (23), pimeclone (20)

-cocept  see -cept

-cog  blood coagulation factors

I.2.0.0

(-)eptacog blood coagulation VII:  eptacog alfa (activated) (77), eptacog alfa pegol (activated)
(101), oreptacog alfa (activated) (109), vatreptacog alfa (activated) (98)

(-)octocog blood factor VIII:  beroctocog alfa (98), damoctocog alfa pegol (109), moroctocog
alfa (72), octocog alfa (73), simoctocog alfa (104), turoctocog
alfa (108), turoctocog alfa pegol (108)

(-)nonacog blood factor IX:  albutrepenonacog alfa (109), eftrenonacog alfa (109), nonacog
alfa (77), nonacog beta pegol (103), nonacog gamma (108),
trenonacog alfa (107)

(-)tridecacog blood factor XIII:  catridecacog (99)
Other:  vonicog alfa (102)

-cogin  blood coagulation cascade inhibitors

I.2.0.0

droptrecogin alfa (activated) (86), pegnivacogin (106), tanptacogin alfa (90), tifacogin
(78)
-conazole (x) systemic antifungal agents, miconazole derivatives

BAN; USAN

S.4.0.0 (BAN: systemic antifungals of the miconazole group)
(USAN: systemic antifungals (miconazole type))

\[
\begin{align*}
\text{albaconazole (87), aliconazole (43), alteconazole (53), arasertaconazole (93), azaconazole (45), beclaconazole (65), broclaconazole (58), butaconazole (40), cisconazole (59), croconazole (55), (cyproconazole (ISO)), democonazole (42), (diniconazole (ISO C_{17}H_{17}Cl_2N_3O)), doconazole (37), eberconazole (64), econazole (27), efinaconazole (104), embeconazole (92), enilconazole (44), (etaconazole (ISO)), fentaconazole (44), fluconazole (54), fosfluconazole (83), (furconazole (ISO/TC 81 N 872 C_{15}H_{14}Cl_2F_3N_3O_2)), (hexaconazole (ISO C_{14}H_{17}Cl_2N_3O)), isavaconazole (96), isoconazole (30), itraconazole (50), ketoconazole (43), lanoconazole (66), luliconazole (86), miconazole (22), neticonazole (63), omoconazole (45), orconazole (40), oxiconazole (42), parconazole (39), (penconazole, (ISO)), posaconazole (82), (propiconazole (ISO)), pramiconazole (95), ravuconazole (83), saperconazole (59), sertaconazole (56), suliconazole (38), (tbeconazole (ISO C_{16}H_{22}ClN_3O)), terconazole (45) (originally triaconazole), tioconazole (40), (uniconazole (ISO C_{15}H_{18}ClN_3O)), valconazole (40), voriconazole (73), zinoconazole (50), zoficonazole (43)
\end{align*}
\]

(c) bifonazole (44), isavuconazonium chloride (96)

cort (x) corticosteroids, except prednisolone derivatives

BAN, USAN

Q.3.0.0 (USAN: -cort-: cortisone derivatives)

\[
\begin{align*}
\text{amebucort (54), anecortave (80), butixocort (63), cicortonide (28), corticotropin (68), corticotropin-zinc hydroxide (68), cortisone (1), cortisuzol (30), cortivazol (23), cortodoxone (15), deflazacort (39) (previously azacort (38)), desoxycortone (4), fluazacort (30), fludrocortisone (6), fludroxyctride (12), fluocortin (31), formocort (18),}
\end{align*}
\]

(a)
INN – The use of stems

hydrocortamate (6), hydrocortisone (1), hydrocortisone aceponate (54), locicortolone dicibate (60), naflocort (50), nicocortonide (40), nivacortol (24), resocortol (74), tixocortol (38)

(b) prednisolone derivatives: clocortolone (16), difluocortolone (18), fluocortolone (15), halocortolone (31)

(c) aldosterone (6), algestone (22) (also progest. when used as algestone acetophenide), medrysone (16)

---

**-coxib (x) selective cyclo-oxygenase inhibitors**

A.4.2.0 (USAN: cyclooxygenase-2 inhibitors)

(a) apricoxib (99), celecoxib (80), cimicoxib (89), deracoxib (80), etoricoxib (84), firocoxib (89), lumiracoxib (87), mavacoxib (94), parecoxib (80), robenacoxib (91), rofecoxib (80), tilmacoxib (84), valdecoxib (80)

---

**-crinat diuretics, etacrynic acid derivatives**

N.1.2.2 (USAN: diuretics (ethacrynic acid derivatives))

(a) brocrinat (51), sulicrinat (52)

(c) etacrynic acid (14), furacrinic acid (29), indacrinone (51), tienilic acid (25)

---

**-crine (d) acridine derivatives**

(a) antineoplastics: amsacrine (44), nitracrine (35)

anthelmintics; antimalarials: floxacrine (34), mepacrine (4)

antidepressants: dimetacrine (19), monometacrine (19)

antiparkinsonian: botiacrine (38)

acetylcholinesterase inhibitors: ipidacrine (73), suronacrine (61), tacrine (8), velnacrine (61)

(c) acridorex (2l), acriflavinium chloride (l), acrisorcin (l3), aminoacridine (l), ethacridine (l), proflavine (l)
-cromil  
**antiallergics, cromoglicic acid derivatives**

K.0.0.0  
(USAN: antiallergics (cromoglicic acid derivatives))

(a)  
ambicromil (48) (replacement of probicromil (46)), isocromil (39), minocromil (50), nedocromil (50), proxicromil (39), terbucromil (38), texacromil (58)

(c)  
cromitrile (46), cromoglicate lisetil (72), cromoglicic acid (l8)

-curium  
see -ium

-cycline (d)  
**antibiotics, protein-synthesis inhibitors, tetracycline derivatives**

S.6.3.0  
(BAN: antibiotics of the tetracycline group)  
(USAN: antibiotics (tetracycline derivatives))

(a)  
amicycline (14), apicycline (17), cetocycline (39), chlortetracycline (4), clomocycline (16), colimecycline (33), demeclocycline (25), demecycline (14), doxycycline (16), eravacycline (108), etamocycline (18), guamecycycline (22), lymecycline (14), meclucycline (14), meglucycline (22), metacycline (12), minocycline (14), nitrocycline (14), omadacycline (102), oxytetracycline (1), pecocycline (15), penimepicycline (16), penimocycline (22), pipacycline (12), rolitetracycline (11), sarecycline (109), sancycline (15), tetracycline (4), tigecycline (86)

related: carubicin (40), daunorubicin (20), detorubicin (41), doxorubicin (25), zorubicin (39)

-dan  
**cardiac stimulants, pimobendan derivatives**

H.1.0.0  
(USAN: positive inotropic agents (pimobendan type))
(a) adibendan (57), bemorodan (61), imazodan (55), indolidan (57), levosimendan (68), meribendan (62), pimobendan (46), prinoxodan (64), senazodan (85), siguazodan (60), simendan (66)

(b) nitrodan (15), tyromedan (15)

-dapsone antmycobacterials, diaminodiphenylsulfone derivatives

S.5.2.0 (USAN: antmycobacterial (diaminodiphenylsulfone derivatives))

(a) acedapsone (22), amidapsone (28), dapsone (23)

-debrin see -ermin

-dil vasodilators

F.2.0.0 F.2.1./2.0 (USAN: -dil; or -dil-: vasodilators (undefined group))

F.2.0.0

(a) alprostadil (39), aviptadil (78), belfosdil (61), benfurodil hemisuccinate (16), biclodil (52), buflomedil (33), burodiline (26), carprazidil (45), cetiedil (27), cinepaxadil (50), dopropidil (59), eliprodil (66), fasudil (64), fenoxedil (27), fostedil (51), fronepidil (59), ifenprodil (27), levosemotiadil (72), manozodil (47), mfenidil (48), minoxidil (25), naftopidil (52), naminidil (87), nesapidil (52), perfomedil (60), pinacidil (46), piribedil (23), pitenodil (37), podilfen (22), radiprodil (98), ripasudil (109), stevaladil (34), suloctidil (30), tipropidil (44), traxoprodil (86), urapidil (27), viquidil (25)

(c) dilmefone (33)
F.2.1.0

(a) **coronary vasodilators**: bepridil (30), bumeclidil (44), ecipramidil (40), fendiline (24), fenetradiol (30), floredil (28), hexadiline (13), ipramidil (51), mepramidil (27), metrifudil (23), nicorandil (44), pirozadil (33), pretiadil (27), razinodil (38), semotiadiol (64), sinitrodidil (74), terodiline (16), tixadil (18), trapidil (29)

(c) **dilazep** (22), **diltiazem** (30)

**-dilol**
carvedilol (50), dioxadilol (53), dramedilol (57), flavodilol (48), mindodilol (52), nipradilol (50) (previously nipradolol), oberadilol (77), parodilol (57), prizidilol (44), tribendilol (54)

(b) diloxanide (8) (amebicidal), methdilazine (10) (antihistaminic), phenobutiodil (6) (contrast medium), prodilidol (12) (analgesic)

**-fradil**
calcium channel blockers acting as vasodilators

(a) mibefradil (72)

**-pendyl**
cloxypendyl (15), isothipendyl (6), oxypendyl (13), prothipendyl (6)

**-dyl**
bisacodyl (13) (laxative), bunamiodyl (10), iofendylate (12), trihexyphenidyl (l) (antiparksonian)

---

**-dilol**
see **-dil**

---

**-dipine** (x) calcium channel blockers, nifedipine derivatives

F.2.1.0

(BAN: calcium ion channel antagonists)

(USAN: phenylpyridine vasodilators (nifedipine type))

![Chemical structure](image)

(a) amlodipine (53), clevidipine (75), darodipine (51) (replaces dazodipine (49)), dexniguldipine (67), elgodipine (61), elnadipine (59), felodipine (44), flordipine (48), isradipine (55), lacidipine (57), lemidipine (69), levalodipine (98), leyniguldipine (67), mesudipine (40), nicardipine (42), nifedipine (27), niguldipine (60), niludipine (38), nilvadipine (52), nimodipine (40), nisoldipine (42), nitrendipine (42), olradipine (69), oxodipine (52), riocipine (51), sagandipine (64), teludipine (64) (previously taludipine (61))

**-nidipine**: aranidipine (69), azelnidipine (69), barnidipine (64), benidipine (58), cilnidipine (66), cronidipine (61), efondipine (66), furnidipine (67), iganidipine (70), lercanidipine
(69) (previously masnidipine), manidipine (59), palonidipine (64), pranidipine (66), sornidipine (58), vatanidipine (77)

(b) budipine (36) (central stimulant, antidepressant and antiparkinsonian), prodipine (29) (central stimulant antiparkinsonian)

-dismase enzymes with superoxide dismutase activity, see -ase item V

-distim see -stim

-dodekin see -kin

-dopa dopamine receptor agonists, dopamine derivatives, used as antiparkinsonism/prolactin inhibitors

E.1.1.0 (USAN: dopamine receptor agonists)

(a) carbidopa (37), ciladopa (52), dopamantine (31), droxidopa (57), etilevodopa (80), fluorodopa (18F) (64), levodopa (21), melevodopa (83), methylodopa (12)

-opamine dopaminergic agents dopamine derivatives used as cardiac stimulant/antihypertensives/diuretics

(USAN: -pamine: dopaminergics (butopamine type))

(a) butopamine (43), cliropamine (59), denopamine (50), dopamine (18), fosopamine (69), ibopamine (43), octopamine (32), oxidopamine (37) (glaucoma), ractopamine (54) (1 of 4 isomers of butopamine)

(b) tiopropamine (36) (gastric and duodenal ulcers), tolpropamine (13) (antihistaminic)

(c) dobutamine (29), docarpamine (59), dopexamine (50), fenoldopam (53), levodobutamine (65), methylodopa (12) (alpha-2 adrenoreceptor agonist, cardiotonic), zelandopam (84)

-dotril see -tril/trilat

-dox see -ox/-alox
-dralazine  antihypertensives, hydrazinephthalazine derivatives

H.3.0.0 (USAN: antihypertensives (hydrazine-phthalazines))

(a) budralazine (33), cadralazine (41), dihydralazine (4), endralazine (39), hydralazine (1), mopidralazine (52), oxdralazine (38), picodralazine (18), pildralazine (48), todralazine (26)

-drine sympathomimetics

E.4.0.0 (USAN: -drine: sympathomimetics)

(a) alifedrine (49), bedoradrine (95), butidrine (16), cafedrine (14), cinnamedrine (19), corbadrine (1), dioxethedrin (6), dioxifedrine (41), etafedrine (14), meluadrine (78), methoxyphedrine (6), midodrine (27), norbudrine (17), oxyfedrine (16), pholedrine (1), pseudoephedrine (11), racephedrine (66), ritodrine (22), theophylline ephedrine (14), tinofedrine (32), trecadrine (53)

not phenethylamine derivatives: levopropylhexedrine (37), octodrine (19), propylhexedrine (6)

(b) bufenadrine (13) (antiemetic) related chemically, chlormerodrin (4) (diuretic), chlormerodrin (197 Hg) (24), dieldrin (10) (insecticide), orphenadrine (8) (spasmolytic)

-frine sympathomimetic, phenethyl derivatives

E.4.0.0

(a) amidefrine mesilate (15), berefrine (68), ciclafrine (33), dimetofrine (27), dipivefrine (39), epinephrine (16), etilefrine (18), etilefrine pivalate (50), gepefrine (38), norepinephrine (45), norfenefrine (16), oxiloferine (62), phenylephrine (1), pivenfrine (42), racepinefrine (41)

-dronic acid calcium metabolism regulator, pharmaceutical aid

N.8.0.0 U.4.0.0 (USAN: -dronate: calcium metabolism regulators)

(a) alendronic acid (61), butedronic acid (59), clodronic acid (37), etidronic acid (22), ibandronic acid (71), incadronic acid (70), lidadronic acid (84), medronic acid (39), minodronic acid (78), neridronic acid (61), olpadronic acid (71), oxidronic acid (42), pamidronic acid (59), piridronic acid (58), risedronic acid (62), tiludronic acid (60), zoledronic acid (71)
-dutant see -tant

-dyl see -dil

-ectin antiparasitics, ivermectin derivatives

(USAN: antiparasitics (ivermectin type))

S.3.0.0

(a) abamectin (53), dimadectin (73), doramectin (63), eprinomectin (73), fuladectin (71), ivermectin (44), latidectin (88), moxidectin (61), nemadectin (60), selamectin (81)

-elestat see -stat

-elvekin see -kin

-emcinal erythromycin derivatives lacking antibiotic activity, motilin agonists

J.0.0.0

(a) alemcinal (84), idremcinal (81), mitemcinal (86)

-enicokin see -kin

-entan (x) endothelin receptor antagonists

F.2.0.0

(a) ambrisentan (85), atrasentan (83), avosentan (93), bosentan (70), clazosentan (90), darusentan (82), edonentan (86), enrasentan (80), fandosentan (87), feloprentan (85), macitentan (107), nebentan (90), sitaxentan (83), tezosentan (81), zibotentan (94)
(-)eptacog  see -cog

**erg**  ergot alkaloid derivatives

F.4.0.0  C.7.0.0  (USAN: -erg-: ergot alkaloid derivatives)

(a)  acetergamine (18), amesergide (67), brazergoline (37), bromerguride (51), cabergoline (54), cianergoline (47), delergotrole (42), dihydroergotamine (16), disulergine (45), dosergoside (54), ergometrine (4), ergotamine (4), etisulergine (47), lergotrole (32), lysergide (8), m ergometrine (54), mesulergine (47), metergoline (18), metergotamine (29), methylergometrine (1), methysergide (11), nicergoline (26), pergolide (41), propisergide (35), prot erguride (50), romergoline (66), sergolexole (60), terguride (50), tiomergine (42), voxergolide (61)

(b)  ergocalciferol (13)

**-eridine**  analgesics, pethidine derivatives

A.4.1.0  (USAN: analgesics (meperidine type))

(a)  anileridine (5), carperidine (11), etoxeridine (6), morpheridine (6), oxpheneridine (5), pheneridine (5), phenoperidine (11), properidine (5), sameridine (68), trimeperidine (6)

(b)  diaveridine (18) (coccidiostat.), eseridine (53), nesperidine (34) (somewhat related)

(c)  benzethidine (9), butoxylate (14), diphenoxylate (10), fetoxilate (21), furethidine (9), hydroxypethidine (5), pethidine (4), piminodine (9)

**-ermin**  growth factors

U.0.0.0

-bermin  vascular endothelial growth factors

(a)  telbermin (85)

-dermin  epidermal growth factors

(a)  murodermin (63), nepidermin (97)
### INN – The use of stems

<table>
<thead>
<tr>
<th>-fermin</th>
<th>fibroblast growth factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>ersofermin (66), palifermin (86), repifermin (82), sprifermin (105), trafermin (74), velafermin (94)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>-filermin</th>
<th>leukemia-inhibiting factor</th>
</tr>
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<tbody>
<tr>
<td>(a)</td>
<td>emfilermin (82)</td>
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<table>
<thead>
<tr>
<th>-nermin</th>
<th>tumour necrosis factor</th>
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</thead>
<tbody>
<tr>
<td>(a)</td>
<td>ardenermin (88), dulanermin (99), plusonermin (73), sonermin (68), tasonermin (76)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>-plermin</th>
<th>platelet-derived growth factor</th>
</tr>
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<tbody>
<tr>
<td>(a)</td>
<td>becaplermin (74)</td>
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<tr>
<th>-sermin</th>
<th>insulin-like growth factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>mecasermin (66), mecasermin rinfabate (91)</td>
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</tbody>
</table>

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<tr>
<th>-termin</th>
<th>transforming growth factor</th>
</tr>
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<tbody>
<tr>
<td>(a)</td>
<td>cetermin (74), liatermin (81)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>-otermin</th>
<th>bone morphogenic proteins</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>avotermin (77), diboterm alfa (89), eptotermin alfa (89), nebotermin (109), radotermin (92)</td>
</tr>
</tbody>
</table>

**Others:** dapiclermin (93)

---

### Q.2.1.0 (USAN: estr-; or -estr-: estrogens)

- almestron (24), benzestrol (1), broparestrol (8), cloxestradiol (12), dienestrol (1), diethylstilbestrol (4), epiestriol (12), epimestrol (22), epistrome (etamestrol) (49) deleted, estradiol (4), estradiol benzoate (4), estradiol undecylate (16), estradiol valerate (35), estramustine (24), estrapronicate (34), estrazinol (16), estriol succinate (14), estrofurate (25), estrone (4), ethinylestradiol (1), fenestrel (18), fosfoster (15), furostilbestrol (1), hexestrol (1), mestranol (12), methallenestril (6), methestrol (1), moxestrol (24), nilestril (32), orestrate (17), polystromol phosphate (36), promestriene (31), quinestradol (15), quinestrol (14)

- alfatradiol (84) (topical), allylestrenol (10) (progest.), ethylestrenol (13) (anabol.), fulvestrant (78) (estrogens receptor antagonist), lynestrenol (13) (progest.)

---

### Q.2.2.0

- edogestron (22), levonorgestrel (30), megestrol (13), melengestrol (13), norgestrel (17), norgestrienone (18), pentagestrone (14), quingestron (13)

- chlorotrianisene (6), clomifene (12), enclomifene (33), zuclomifene (33) (antiestrogens)
-etanide  see -anide

-ethidine  see -eridine

-exakin  see -kin

-exine  mucolytic, bromhexine derivatives
K.0.0.0

(a) adamexine (36), bromhexine (20), brovanexine (31), cistinexine (54), dembrexine (56), neltexine (62), oxabrexine (40)

(b) enefexine (54) (antidepressant), gamfexine (17) (antidepressant)

(c) ambroxol (32) (dembrexol (50): replaced by dembrexine (56))

-farcept  see -cept

-fenamate  see -fenamic acid

-fenamic acid  anti-inflammatory, anthranilic acid derivatives
-fenamate  "fenamic acid" derivatives

(USAN: -fenamic acid: anti-inflammatory (anthranilic acid derivatives); -fenamate: "fenamic acid" ester or salt derivatives)

A.4.2.0

(a) clofenamic acid (13), enfenamic acid (45), flufenamic acid (13), meclofenamic acid (17), mefenamic acid (13), tolfenamic acid (24)
colfenamate (29), etofenamate (29), prefenamate (36), terofenamate (32), ufenamate (50)

(b) clantifen (24), oxyfenamate (13)

phonetically close: clofenamide (13), diclofenamide (13) (N.1.1.0)

(c) flutiazin (22)
-fenin  diagnostic aids; (phenylcarbamoyl)methyl iminodiacetic acid derivatives
U.1.0.0

(a) arclofenin (52), butilfenin (41), disofenin (43), etifenin (43), galtifenin (59), lidofenin (39), mebrofenin (47)

-fenine  analgesics, glafenine derivatives (subgroup of fenamic acid group)
(USAN: -fenine: analgesics (fenamic acid subgroup))
A.4.3.0

(a) antrafenine (35), floctafenine (24), florifenine (50), glafenine (15), nicafenine (40)
(b) spasmolytic diphenylacetates: adiphenine (1), drofenine (26)
other: buphenine (8) (vasodilator), cinfenine (27) (antidepressant)

-fentanil  opioid receptor agonists, analgesics, fentanyl derivatives
(USAN: -fentanil: narcotic analgesics (fentanyl derivatives))
A.4.1.0

(a) alfentanil (43), brifentanil (62), carfentanil (39), fentanyl (14), lofentanil (43), mirfentanil (64), ocfentanil (61), remifentanil (67), sufentanil (36), trefentanil (67)

-fentrine  inhibitors of phosphodiesterases
K.0.0.0
(a) benafentrine (44), pumafentrine (86), tolafentrine (70)

-fermin  see -ermin
**-fiban**

**fibrinogen receptor antagonists (glycoprotein IIb/IIIa receptor antagonists)**

USAN

I.2.0.0

carafiban (78), elarofiban (83), fradafiban (72), gantofiban (80), lamifiban (72), lefradafiban (75), lotrafiban (78), orbofiban (75), roxifiban (77), sibrafiban (77), tirofiban (73), xemilofiban (74)

**-fibrate**

**clofibrate derivatives**

BAN, USAN

H.4.0.0

(BAN: substances of the clofibrate group)

(USAN: -fibrate, -fibric acid: antihyperlipidaemics (clofibrate type))

\[\text{Chemical structure image}\]

(a) bezafibrate (35), biclofibrate (28), binifibrate (44), choline fenofibrate (97), ciprofibrate (36), clinofibrate (39), dulofibrate (43), etofibrate (31), fenirofibrate (49), fenofibrate (35), lifibrate (30), nicoifibrate (31), picafibrate (35), ponofibrate (37), ronifibrate (55), salafibrate (41), serfibrate (34), simfibrate (22), sitofibrate (32), timofibrate (40), tocofibrate (33), urefibrate (37), xantifibrate (31)

clofibrac acid (20), clofibrate (13), aluminium clofibrate (31), calcium clofibrate (34), cinnarizine clofibrate (38), etofylline clofibrate (38), magnesium clofibrate (31), clofibride (28), plafibrate (39)

related: arhalofenate (101), beclobrate (35), eniclobrate (39), gemfibrozil (34), halofenate (20), lifibrol (62), metibride (53), terbufibrol (35), tibric acid (33), (fibrafylline (43) deleted)

(b) bromebric acid (25) (prophylaxis of migraine), fibracillin (30) (antibiotic)

(c) nafenopin (24), treloxinate (25)

**-filermin**

see -ermin

**-flapon**

5-lipoxygenase-activating protein (FLAP) inhibitors

USAN

K.0.0.0

J.0.0.0

fiboflapon (105), quiflapon (72), veliflapon (95)
-flurane halogenated compounds used as general inhalation anaesthetics

A.1.1.0 (USAN: general inhalation anaesthetics (halogenated alkane derivatives))

(a) aliflurane (36), cryofluorane (6), desflurane (62), enflurane (25), isoflurane (28), methoxyflurane (11), norflurane (20), roflurane (12), sevoflurane (25), teflurane (12)

(b) apaflurane (73)

(c) fluroxene (12), halothane (6)

-formin (d) antihyperglycaemics, phenformin derivatives

M.5.2.0 (USAN: hypoglycemics (phenformin type))

H N H
N H

(a) benfosformin (29), buformin (17), etoformin (34), metformin (21), metformin glycinate (103), phenformin (10), tiformin (22)

-fos (-vos) insecticides, anthelminthics, pesticides etc., phosphorous derivatives

S.3.1.0 (USAN: -fo(s)-: phosphoro-derivatives)

(Y.0.0.0)

1. organophosphorous derivatives:

R O X = O or S

(a) vet. insecticides:

quintiofos (25)

(b) toldimfos (23) (vet. phosphorous source)

(c) vet. insecticides and anthelminthics:

metrifonate (16)

anthelmintic: butonate (30)
100  INN – The use of stems

2.  phosphates:

\[
\frac{\text{R}}{O} \frac{\text{PO}}{O} \frac{\text{O}}{R'} \frac{\text{O}}{R''}
\]

(a)  vet. insecticides: clofenvinfos (23)

vet. anthelminthics: bromofenofos (43), dichlorvos (28), naftalofos (16)

anthelminthics: vincofos (28)

(b)  triclofos (13) (hypnotic, sedative)

(c)  vet. anthelminthics: fospirate (21), haloxon (16)

3.  phosphorothioates:

\[
\frac{\text{R}}{O} \frac{\text{PO}}{O} \frac{\text{S}}{R'} \frac{\text{S}}{R''}
\]

vet. insecticides:

(a)  bromofos (25), coumafos (16), fenclofos (23), temefos (31)

(c)  dimpylate (16), phoxim (20) (vet. insecticide and anthelmintic), pyrimate (16)

4.  phosphorodithioates:

\[
\frac{\text{S}}{R} \frac{\text{PO}}{O} \frac{\text{S}}{R'} \frac{\text{S}}{R''}
\]

(a)  benoxafos (22) (vet. pesticide)

(c)  carbofenotion (23) (vet. insecticide), dioxation (16) (vet. insecticide), (malathion (46) (deleted!))

5.  phosphoramidates

\[
\frac{\text{R}}{N} \frac{\text{H}}{O} \frac{\text{PO}}{O} \frac{\text{O}}{R'} \frac{\text{R''}}
\]

crufoamate (16), uredofos (37)

anthelmintic:

imcarbofos (44)

-fos- or
fos-

-fos-

various pharmacological categories belonging to fos (other than those above):

alafosfalin (41), amifostine (44), belfosdil (61), benfosformin (29), butafosfan (38),
cifostodine (50), creatinolfosfate (20), dексфосферин (68), ferpifosate sodium (69),
furifosmin (70), monophosphothiamine (8), sodium picofosfate (37), sofосbuvир (108),
sparfosic acid (46), technetium (99mTc) furifosmin (70), tetrofosmin (66), trifosmin (74)
**-fosfamide**: alkylating agents of the cyclophosphamide group  
(USAN: isophosphoramid mustard derivatives)
- canfosfamide (92), cyclophosphamide (10), defosfamide (12), glufosfamide (77), ifosfamide (23), mafosfamide (51), palifosfamide (99), perfosfamide (66), sufosfamide (36), trofosfamide (23)

**-fosine** cytostatic
- edelfosine (59), ilmofosine (56), miltefosine (61), perifosine (78)

**fos-**
- fosallyudine tidoxil (95), fosamprenavir (83), fosaprepitant (94), fosarilate (53), fosazepam (27), fosbretabulin (100), foscarnet sodium (42), foscolic acid (12), fosdevirine (103), fosenazide (48), fosféstrol (15), fosfluconazole (83), fosfluridine tidoxil (93), fosfocreatinine (50), fosfomycin (25), fosfonet sodium (35), fosfosal (37), fosfructose (81), fosinopril (69), fosinoprilat (62), fosmenic acid (49), fosmidomycin (46), fosopamine (69), fosphenvtoin (62), fospirate (21), fospropofol (100), fosquidone (64), fostamatinib (100), fostedil (51), fostriecin (55), fosveset (83)

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**-fovir**  see vir

**-fradil**  see -dil

**-frine**  see -drine

**-fungin** antifungal antibiotics

S.6.0.0 (USAN: antifungal antibiotics (undefined group))

S.4.3.0

(a) abafungin (74), anidulafungin (81), basifungin (72), caspofungin (80), cilofungin (60), fusafungine (15), kalafungin (20), micafungin (84), nifungin (24), oxifungin (40), sinefungin (39), triafungin (40)

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**-fylline**  N-methylated xanthine derivatives

B.1.0.0 (USAN: theophylline derivatives)

(a) acefylline clofibrol (44), acefylline piperazine (14), albifylline (66), aminophylline (4), apaxifylline (71), arofylline (75), bamifylline (15), cipamfylline (71), denbufylline (55),...
derenofylline (102), dimabefylline (19), diniprofylline (18), diprophylline (1), doxofylline (47), enprofylline (44), etamiphylline (6), etofylline (14), etofylline clofibrate (38), fibrafylline (43) (deleted), flufylline (48), fluprofylline (50), furafylline (48), guaifylline (16), ibufylline (62), istradefylline (89), laprafylline (60), lisoxyzemilate (72), lomifylline (37), mercurophylline (1), metescufylline (15), mexafylline (48), midaxifylline (79), naxifylline (86), nestifylline (64), pentifylline (29), pentoxyzemilate (29), perbufylline (58), pimefylline (21), propentofylline (46), proxphylline (10), pyridofylline (14), rolafylline (98), spirofylline (58), stacofylline (73), tazifylline (52), theophylline ephedrine (14), tonapofylline (102), torbafylline (56), triclofylline (19), verofylline (43), visnafylline (24), choline theophyllinate (8), fenetylline (16)

cafedrine (14), dimenhydrinate (1), dimethazan (8), meralluride (1), mercumatin sodium (4), piprinhydrinate (8), promethazine tocolactate (10), protheobromine (14), theodrenaline (14), xantifibrate (31), xantinol nicotinate (16)

radicals and groups: teprosilate (29)

gab (x) gabamimetic agents

E.0.0.0

(a) atagabalin (102), fengabine (53), gabapentin (46), gabapentin enacarbil (94), gadoxadol (48) (used as analgesic), imagabalin (101), lesogabaran (100), mirogabalin (109), pivagabine (66), pregabalin (78), progabide (43) (used as antiepileptic), retigabine (76), tiagabine (63), tolgbide (53), vigabatrin (52) (anticonvulsants)

(b) gabexate (35) (proteolytic)

gado- (x) diagnostic agents, gadolinium derivatives

U.0.0.0 (USAN: gadolinium derivatives (principally for diagnostic use))

(a) gadobenic acid (64), gadobutrol (66), gadocoletic acid (85), gadodenterate (91), gadopentetic acid (50), gadoterol (70), gadoteric acid (59), gadoversetamide (71), gadoxetic acid (71)

-gatran (x) thrombin inhibitors, antithrombotic agents

I.2.0.0 (USAN: thrombin inhibitors (argatroban type))

(a) atecegatran (103), atecegatran metoxil (105), dabigatran (83), dabigatran etexilate (87), efegatran (71), flovagatran (97), inogatran (72), melagatran (74), napsagatran (72), sofogatran (95), ximelagatran (84)

(c) argatroban (57)
-gene gene therapy products (see also Annex 4)

Z.0.0.0 A two-word name approach has been selected:

**Word 1**  -gene gene component
- cima- cytosine deaminase
- ermin- growth factor
- kin- interleukin
- lim- immunomodulator
- lip- human lipoprotein lipase
- mul- multiple gene
- stim- colony stimulating factor
- tima- thymidine kinase
- tusu- tumour suppression

**Word 2**  -vec vector component is a virus
- repvec replicating viral vector
- adeno- adenovirus
- cana- canarypox virus
- foli- fowlpox virus
- herpa- herpes virus
- lenti- lentivirus
- morbili- paramoxyviridae morbillivirus
- parvo- adeno-associated virus (paroviridae dependovirus)
- retro- other retrovirus
- vaci- vaccinia virus

-plasmid in case the vector is a plasmid

In case of non-plasmid naked DNA, there is no need for a second word in the name.

In case of antisense nucleotides, please refer to the already existing stem -rsen.

(a) alferminogene tadenovec (95), alipogene tiparvovec (99), amolimogene bepiplasmid (98), beperminogene perplasmid (95), contusugene ladenovec (97), golnerminogene pradenovec (101), pexastimogene devacirepvec (108), riferminogene pecaplasmid (100), rilimogene galvacirepvec (107), rilimogene glafolivec (107), sitimagene ceradenovec (97), taberminogene vadenovec (100), talimogene laherparepvec (104), tipapkinogene sovacivec (102), velimogene aliplasmid (97), vocimagene amiretrorepvec (107)

BAN, USAN

gest (x) steroids, progestogens

Q.2.2.0 (USAN: -gest-: progestins)

(a) altrenogest (46), anagestone (16), cingestol (20), clogestone (21), clomegestone (20), demegetstone (24), desogestrel (38), deroxestrel (30), dienogest (49), dydrogesterone (12), edogestrone (22), etonogestrel (65), flugestone (16), gestaclone (23), gestadienol (22),
gestodene (37), gestonorone caproate (16), gestrinone (39), haloprogesterone (11), hydroxyprogesterone (8), hydroxyprogesterone caproate (8), levonorgestrel (33) (previously dexamethasone), medrogestone (15), medroxyprogesterone (10), medrogestone (15), megestrol (13), melengestrol (13), metogest (33), nomegestrol (49), norgestromin (83), norgestrel (14), norgestimate (35), norgestomet (32), norgestrel (17), norgestrenone (18), oxogestone (19), pentagestrone (14), progestone (4), progestogen (28), promegestone (38), quingestanol (15), quingestrone (13), segesterone (89), tigestol (20), tosagestin (86), trengestone (22), trimegestone (66)

algestone (22) (glucocorticoid)

allylestrenol (10), chlormadinone (12), cismadinone (12), delmadinone (23), dimethisterone (8), ethisterone (4), ethynerone (17), etynodiol (13), hydromadinone (12), lynestrenol (13), metynodiol (27), norethisterone (6), noretynodrel (13), norvinisterone (10)

clostridone (15) (antiestrogen), dimepregnen (24) (antiestrogen)

-gestr-

see estr

USAN

-giline

monoamine oxydase (MAO)-inhibitors type B

C.3.1.0

(a) pargyline (13)

clorgiline (23), mofegiline (69), rasagiline (70), selegiline (39)

USAN

-gillin

antibiotics produced by Aspergillus strains

S.6.0.0

(a) fumagillin (1), mitogillin (17)

USAN

-gli (x)

antihyperglycaemics

( previously gly-)

M.5.2./3.0 (BAN: sulphonamide hypoglycaemics)

(USAN: gli-: antihyperglycaemics)

1. sulphonamide derivatives: gliamilide (33), glibenclamide (18), glibornuride (22), glibutimine (31), glicaramide (28), glicetanile (37), glicazide (25), (deleted: glidanile (23)), glicondamide (44), gildazamide (24), glifumide (33), glimepiride (53), glipalamide (62), glipizide (27), gliquidone (28), glisamuride (45), glisentide (58) (previously glipentide (27)), glisindamide (43), glisolamide (43), glisoxepide (24), glybuthiazol (8), glybuzole (15), glyclopyramide (17), glycyclamide (12), glyhexamide (15), glymidine sodium (15), glyoctamide (14), glyparamide (USAN only), glypinamide (13), glyprothiazol (8), glysobuzole (12)
2. other than sulfonamide derivatives: camiglibose (67), deriglidole (66), emiglitate (55), fasiglifam (107), imeglimin (98), inglifibor (85), isaglidole (61), limiglidole (100), linoglide (48), managlinat dialanetil (96), meglitinide (34), midaglizole (57), miglitol (55), mitiglinide (78), naglivan (65), nateglinide (77), piraglalin (97), pirogliride (40), repaglinide (65), teglicar (91), teglibesine (64), voglibose (65)

3. peptide: seglitide (57)

(b) cromoglicate lisetil (72), cromoglicic acid (18), ioglicic acid (33), ioxaglic acid (37), sulglicotide (29) (treatment of peptic ulcers), tropigline (08)

c) acetohexamide (12), butadiazamide (10), carbutamide (36), chlorpropamide (8), heptolamide (12), metahexamide (10), palmodixic acid (48), thiohexamide (12), tolazamide (12), toltubutamide (6), tolpentamide (12), toltopyramide (13)

gly-

prior to revision of the General Principles

(a) glybuthiazol (08), glybuzole (15), glyclopymamide (17), glycyclamide (13), glyhexamide (15), glymidine sodium (15), glyoctamide (14), glypinamide (13), glyprothiazol (08), glysozobuzole (12)

c) glycerol (4), glycobiarsol (l), glycopyrronium bromide (12)

gliflozin sodium glucose co-transporter inhibitors, phlorizin derivatives USAN

(USAN: phlorozin derivatives, phenolic glycosides)

atigliflozin (100), canagliflozin (102), dapagliflozin (97), empagliflozin (104), ertugliflozin (107), ipragliflozin (103), luseogliflozin (104), remogliflozin etabonate (98), sergliflozin etabonate (98), tofogliflozin (103)

glptin dipeptidyl aminopeptidase–IV inhibitors USAN

M.5.2.0

(a) alogliptin (96), anagliptin (103), bisegliptin (103), cermegliptin (98), denagliptin (94), dutogliptin (100), evogliptin (107), gemegliptin (103), gosogliptin (101), linagliptin (99), meglolgiptin (99), omargliptin (107), saxagliptin (92), sitagliptin (94), teneligliptin (99), trelagliptin (106), vildagliptin (90)

glitaraz peroxisome proliferator activating receptor-γ (PPAR-γ) agonists USAN

M.5.2.0

(USAN: PPAR agonists (not thiazolidene derivatives))

(a) aleglitazar (95), cevoglitazar (94), farglitazar (84), imeglitazar (91), indeglitazar (100), muroglitazar (90), nageglitazar (92), oxeglitazar (88), pelglitazar (92), pemaglitazar (92), ragaglitazar (85), reglitaraz (87), saroglitazar (108), sipoglitazar (93), sodelglitazar (95), tesaglitazar (85)

glizone peroxisome proliferating receptor-γ (PPAR-γ) agonists, thiazolidinedione derivatives USAN

M.5.2.0

(USAN: PPST agonists (thiazolidene derivatives))

(a) ciglitazone (50), balaglitazone (84), darglitazone (69), edaglitazone (91), englitazone (64), lobeglitazone (95), netoglitazone (85), pioglitazone (60), rivoglitazone (87), rosiggilazone (78), troglitazone (69)

c) efatutazone (102)
-gliflozin       see gli

-gliptin        see gli

-glitazar       see gli

-glitazone      see gli

-glumide        cholecystokinin antagonists, antiulcer, anxiolytic agents

J.0.0.0/C.1.0.0

(a) amiglumide (85), dexloxiglumide (65), itriglumide (82), lorglumide (56), loxiglomide (57), proglumide (16), spiroglumide (70), tomoglumide (56)

-glutide        see tide

-golide         dopamine receptor agonists, ergoline derivatives

E.1.1.0

(a) adrogolide (82), naxagolide (60), pergolide (41), quinagolide (62), voxergolide (61)

(c) rotigotine (83)

-gosivir        see vir

-gramostim      see -stim

-grastim        see -stim

-grel-          platelet aggregation inhibitors

I.2.1.0 (USAN: -grel- or -grel: platelet aggregation inhibitors, primarily platelet P2Y12 receptor antagonists)

(a) anagrelide (42), camonagrel (61), cangrelor (97), clopidogrel (57), dazmegrel (51), elinogrel (101), furegrelate (53), isbogrel (59), itazigrel (56), midazogrel (53), nafagrel (64), nicogrelate (48), oxagrelate (47), ozagrel (55), pamicogrel (70), parogrelil (94),
pirmagrel (53), prasugrel (91), rafigrelide (106), regrelor (97), ridogrel (59), rolafagrel (65),
samixogrel (72), sarpogrelate (63), satigrel (67), sunagrel (52), temanogrel (103), terbogrel
(75), ticagrelor (95), trifenagrel (53)

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### guan-
**antihypertensives, guanidine derivatives**

**H.3.0.0**

\[
\text{H}_2\text{N} \rightarrow \text{NH}_2
\]

(a) guanabenz (26), guanacline (16), guanadrel (20), guanazodine (27), guancidine (18),
guanclodine (36), guanethidine (11), guanfacine (35), guanisouquine (15), guanclocine (15),
guanocline (16), guanoxan (15), guanoxabenz (31), guanoxifin (16), guabenxan (32)

(c) guabenxan (32)

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### -bine
**see** -ribine

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### -icam
**anti-inflammatory, isoxicam derivatives**

**A.4.2.0** (USAN: anti-inflammatory agents (isoxicam type))

\[
\text{N} \end{align}
\]

(a) ampiroxicam (56), droxicam (52), enolicam (45), isoxicam (30), lornoxicam (59),

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### -ifene
**antiestrogens or estrogen receptor modulators, clomifene and tamoxifen derivatives**

(USAN: -ifen(e): antiestrogens of the clomifene and tamoxifen groups)

**Q.2.1.0**

\[
\begin{align*}
R &\text{Cl} & R' & \text{C}_2\text{H}_5 \\
\text{clomifene} & \text{tamoxifen} & \text{C}_2\text{H}_5 & \text{CH}_3
\end{align*}
\]

(a) acolbifene (86), clomifenoxide (54), tesmilifene (81)

-oxifene: afimoxifene (95), arzoxifene (80), bazedoxifene (86), droloxifene (53), idoxifene
(68), lasofoxifene (81), levoormeloxifene (73), miproxifene (74), ormeloxifene (69),
pipexofifene (84), raloxifene (54), tamoxifen (28), trioxifene (41), zindoxifene (54)

-mfene: clomifene (12), enclomifene (33), fispemifene (89), nitromifene (33), ospermifene
(85), panomifene (58), sivifene (99), toremifene (53), zuclomifene (33)

(b) dextropropoxyphene (7), levopropoxyphene (7), suloxifen (30) (bronchodilator)

(c) nafoxidine (16)
<table>
<thead>
<tr>
<th>Stems</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-igetide</td>
<td>see -tide</td>
</tr>
<tr>
<td>-lide</td>
<td>class III antiarrhythmics, sematilide derivatives</td>
</tr>
<tr>
<td>H.2.0.0</td>
<td>(USAN: class III antiarrhythmic agents)</td>
</tr>
<tr>
<td>(a)</td>
<td>ambasilide (59), artilide (67), azimilide (72), dofetilide (65), ersentilide (72), ibutilide (63), ipazilide (62), risotilide (62), sematilide (58), trecetilide (79)</td>
</tr>
<tr>
<td>(b)</td>
<td>bromacrylide (13), ftaxilide (32), gliamilide (33)</td>
</tr>
<tr>
<td>imex (d)</td>
<td>immunostimulants</td>
</tr>
<tr>
<td>S.7.0.0</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>azimexon (40), forfenimex (55), imexon (37), roquinimex (53), ubenimex (56)</td>
</tr>
<tr>
<td>-imibe</td>
<td>antihyperlipidaemics, acyl CoA: cholesterol acyltransferase (ACAT) inhibitors,</td>
</tr>
<tr>
<td>M.3.0.0</td>
<td></td>
</tr>
<tr>
<td>(a)</td>
<td>avasimibe (80), canosimibe (100), eflucimibe (84), eldacimibe (76), ezetimibe (83), lecimibide (70), octimibate (52), pactimibe (89)</td>
</tr>
<tr>
<td>-imod</td>
<td>immunomodulators, both stimulant/suppressive and stimulant</td>
</tr>
<tr>
<td>S.7.0.0</td>
<td>(USAN: immunomodulators)</td>
</tr>
<tr>
<td>(a)</td>
<td>agatolimod (98), apilimod (95), atiprimod (75), blisibimod (107), ceralifimod (109), cridanimod (83), defoslimod (79), entolimod (108), epetirimod (97), esonarimod (79), fingolimod (91), förgerimod (104), golotimod (97), glasrimod (74), iguratimod (86), imiquimod (66), ivarimod (60), laquinimod (85), litenimod (96), paquinimod (94), pidotimod (63), ponesimod (103), rabeximod (97), resiquimod (82), rintatolimod (102), siponimod (106), sotirimod (94), susalimod (73), tasquinimod (93), tiprotimod (57)</td>
</tr>
<tr>
<td>-mapimod</td>
<td>mitogen-activated protein (MAP) kinase inhibitors</td>
</tr>
<tr>
<td></td>
<td>(USAN)</td>
</tr>
<tr>
<td>(a)</td>
<td>balamapimod (96), bentamapimod (98), dilmapimod (102), doramapimod (88), losmapimod (101), pamapimod (96), talmapimod (99), semapimod (89)</td>
</tr>
</tbody>
</table>
-imus  immunosuppressants (other than antineoplastics)  USAN

S.7.0.0  (USAN: immunosuppressives)

(a)  abetimus (81), anisperimus (82), gusperimus (68), laflunimus (70), manitimus (93), napirimus (60), tresperimus (75), vidofludimus (103)

-rolimus  immunosuppressants, rapamycin derivatives  USAN

(a)  everolimus (82), olcorolimus (105), pimecrolimus (81), ridaforolimus (108), sirolimus (69), tacrolimus (66), temsirolimus (94), umirolimus (103), zotarolimus (94)

-ine (d)  alkaloids and organic bases

(a)  1669 (18.9%) INNs ending in -ine in Lists 1-109 of proposed INNs

-inostat  see stat

io- (x)  iodine-containing contrast media  BAN, USAN

U.1.1.0

(a)  iobenzamic acid (14), iobitridol (68), iobutoic acid (20), iocarmic acid (22), iocetamic acid (18), iodamide (15), iodecimol (51), iodetryl (1), iodixanol (53), iodophthalein sodium (1), iodoxamic acid (26), iofendylate (12), ioforminol (103), iofratol (67), ioglicic acid (33), ioglucolic acid (41), ioglucomide (41), iogluonide (40), ioglycemic acid (15), iohexol (43), iolidonic acid (26), iolixanic acid (26), ilomeglomic acid (26), iomepril (54), irominic acid (37), iopamidol (40), iopanoic acid (1), iopentol (52), iopheenoic acid (4), ioprocinic acid (39), iopromide (44), iopronic acid (28), iopydol (14), iopydone (14), iosophol (54), iosefamic acid (14), iotameric acid (33), iotomine (88), iosismonide (50), iotralamide (39), iotumonic acid (33), 1otalamic acid (13), iotasul (43), iotetric acid (37), iotrancic acid (28), iotriside (60), iotrizec acid (22), iotrolan (51), iotroxic acid (32), ioversol (56), ioxabrolidiac acid (53), ioxgallic acid (37), ioxilan (59), ioxitalamic acid (22), ioxotrizoic acid (33), iozomic acid (24)

(c) adipiodone (4), bunamiodyl (10), dimethiodal sodium (1), diodone (1), ethyl cartrizoate (12), methiodal sodium (1), metrizamide (26), pheniodol sodium (1), phenobutiodidil (6), propyl docetrizoate (10), propyliodone (1), sodium acetrizoate (4), sodium amidoetrizoate (4), sodium diprotrizoate (6), sodium metrizoate (13), sodium tyropanoate (12)
radiopharmaceuticals, iodine-contained

(a) ethiodized oil ($^{131}$I) (24), iobenguane ($^{131}$I) (57), iocanlic acid ($^{123}$I) (77), iodinated ($^{125}$I) human serum albumin (24), iodinated ($^{131}$I) human serum albumin (24), iodine ($^{124}$I) girentuximab (101), iodoacrylic acid ($^{125}$I) (47), iodocholesterol ($^{131}$I) (39), iodoflic acid ($^{123}$I) (95), iofolast ($^{125}$I) (105), iofetamine ($^{123}$I) (51), ioflubenzamide ($^{131}$I) (103), ioflupane ($^{123}$I) (75), iolopride ($^{123}$I) (73), iomazenil ($^{123}$I) (66), iometin ($^{125}$I) (24), iometin ($^{131}$I) (24), iometopane ($^{123}$I) (76), sodium iodide ($^{125}$I) (24), sodium iodide ($^{131}$I) (24), sodium iodohippurate ($^{131}$I) (24), sodium iotalamate ($^{125}$I) (24), sodium iotalamate ($^{131}$I) (24)

(c) fibrinogen ($^{125}$I), macrolabs ($^{131}$I) (33), rose bengal ($^{131}$I) sodium (24), tolpyvidone ($^{131}$I) (24)

Usan

-hirudin derivatives

I.2.1.0 (USAN: anticoagulants (hirudin type))

bivalirudin (72), desirudin (70), lepirudin (73), pegmusirudin (77)

Usan

-class I antiarrhythmics, disopyramide derivatives

H.2.0.0 (USAN: -isomide: antiarrhythmics (disopyramide derivatives))

(a) actisomide (60), bidisomide (63), pentisomide (59)

(c) disopyramide (12)

BAN, USAN

-quaternary ammonium compounds

E.3.0.0 (USAN: -ium or -onium: quaternary ammonium derivatives)

(a) azamethonium bromide (1), decamethonium bromide (1), dicolinium iodide (25), dimecolinium iodide (14), fubrogonium iodide (18), hexamethonium bromide (1), mebezonium iodide (16), oxapropanium iodide (1), oxydipentonium chloride (1), pentamethonium bromide (1), pentolonium tartrate (4), prodeconium bromide (6), stilonium iodide (32), suxamethonium chloride (1), suxethonium chloride (1), tetrylammonium bromide (1), tiametonium iodide (15), trepirium iodide (25)

(c) gallamine triethiodide (1)
E.3.0.0  
neuromuscular blocking agents with rigid structure
(USAN: -curium, also -curonium; neuromuscular blocking agents)

(a)  
-curonium: alcuronium chloride (17), candocuronium iodide (70), dacuronium bromide (21), pancuronium bromide (19), pipercuronium bromide (69), rapacuronium bromide (78), rocuronium bromide (66), stericuronium iodide (21), vecuronium bromide (46)

-curium (d) (curare-like substances): atracurium besilate (42), cisatracurium besilate (73), doxacurium chloride (58), gantacurium chloride (91), mivacurium chloride (58), tricurium iodide (22), trupicurium iodide (22)

-others: dimethyltubocurarinium chloride (1), fazadinium bromide (32), hexafluronium bromide (12), laudexium metilsulfate (4), pentacynium chloride (6), phenactropinium chloride (8), piprocurarium iodide (11), thiazinamium metilsulfate (37), trimethidinium methosulfate (8)

(c)  tubocurarine chloride (1)

E.1.0.0  
cholinergic agents

(a)  
aclatonium napadisilate (44), ambenonium chloride (6), benzpyrinium bromide (1), carpronium chloride (23), demecarium bromide (10), furthretonium iodide (1)

(c)  acetylcholine chloride (4), charbacol (4), choline alfoscerate (29), choline chloride (4), choline gluconate (1), choline salicylate (15) (analgesic), choline theophyllinate (8) (smooth muscle relaxant), methacholine chloride (1), nitricholine perchlorate (6) (antiasthmatic), distigmine bromide (16), ecothiopate iodide (6), neostigmine bromide (4), obidoxime chloride (16), pralidoxime iodide (10), pyridostigmine bromide (6)

E.2.0.0  
anticholinergic agents

(a)  
actidinium bromide (100), benzilonium bromide (13), benzopyrinnium bromide (12), beperidium (57), bevonium metilsulfate (19), butropium bromide (30), ciclonium bromide (19), ciclotropium bromide (50), cimetropium bromide (51), clidinium bromide (6), cyclopennyronium bromide (12), dimetipirium bromide (37), diponium bromide (15), dotefonium bromide (24), droclidinium bromide (33), emeronium bromide (18), etipirium iodide (22), fenclexonium metilsulfate (20), fenpiperinium bromide (26), fentoniun bromide (29), flutropium bromide (50), glycopyrrying bromide (12), heteronium bromide (14), hexasonium iodide (15), hexocyclium metilsulfate (6), hexopyrinnium bromide (13), ipratropium bromide (31), methanthelinium bromide (1), methylbenactyzium bromide (34), metocinium iodide (26), nolinium bromide (37), otilinium bromide (38), oxapium iodide (26), oxitropium bromide (18), oxtropium bromide (36), oxyphenonium bromide (1), oxypyrinnium bromide (13), oxysonium iodide (15), pentapiperium metilsulfate (26), prifinium bromide (20), ritopirrinnium bromide (33), sintropium bromide (47), sulroponium (18), tematropium metilsulfate (64), tiemonium iodide (13), timepidium bromide (29), tiotropium bromide (67), tiquizium bromide (47), trelentilium bromide (24), trospium chloride (25), umeclidinium bromide (106), xenytropium bromide (15)
(c) atropine methonitrate (4), buzepide metiodide (14), chlorisondamine chloride (6),
diphemamil metilsulfate (4), homatropine methylbromide (1), isopropramide iodide (8),
mepenzolate bromide (10), octatropine methylbromide (10), parapenzolate bromide (14),
pipenzolate bromide (6), poldine metilsulfate (11), propantheline bromide (1),
propyromazine bromide (12), tridihexethyl iodide (6), tropenziline bromide (11), thihexinol
methylbromide (1), tricyclamol chloride (4)

S.2.3.0 surfactants used as antibacterials and antiseptics

(a) acriflavinium chloride (1), amantanium bromide (39), benzalkonium chloride (1),
benzodondecinium chloride (1), benzoxonium chloride (36),
cefalonium (16), cefmepidium chloride (57), cetalkonium chloride (15), cethexonium
chloride (36), cetrimonium bromide (1), cetlypyridinium chloride (1), chlorphenoctium
amsonate (8), deditonium bromide (15), denatonium benzoate (15), dequalinium chloride
(8), disiquonium chloride (55), dodeclonium bromide (16), doflamion chloride (21),
fludazonium chloride (33), furazolium chloride (15), halopenium chloride (10),
headaquinium chloride (8), lapirium chloride (27), lauralkonium chloride (62), laurcectum
bromide (70), laurolinium acetate (12), mectronium etilsulfate (51), metalkonium chloride
(60), methylbenzethonium chloride (1), methylrosanilinium chloride (1), methylthionium
chloride (1), miripirium chloride (63), miristalkonium chloride (41), octafonium chloride
(16), opratonium iodide (76), penocotonium bromide (20), pirlalkonium bromide (19),
polidronium chloride (67), polixetonium chloride (70), prolion iodide (14),
sanguinarium chloride (68), sepazonium chloride (34), tetradonium bromide (18),
tibezonium iodide (32), tiodonium chloride (36), tolodion chloride (36), toloconium
metilsulfate (17), tonzonium bromide (14), triclobisonium chloride (10)

c domiphen bromide (23)

other agents

alagebrium chloride (91), albitiazolium bromide (101), amezinium metilsulfate (36),
amprolium chloride (16), azaspirium chloride (25), bephenium hydroxynaphthoate (11),
bibenzonium bromide (12), bimidzium iodide (27), bretylium tosilate (10),
butopyrammonium iodide (8), carcainium chloride (36), cloflilium phosphate (42),
datelliptium chloride (57), detajmium bitartrate (34), dibrosipidium chloride (51),
ditercalinium chloride (49), edrophonium chloride (4), elliptinium acetate (43), emilium
tosilate (37), enisamium iodide (101), famiraprinium chloride (58), feniodium chloride
(23), gallium (67Ga) citrate (33), homidium bromide (36), isavucoazinion chloride (96)
isometamidium chloride (18), mefenidramium metilsulfate (52), meldonium (86),
mequitamium iodide (61), nolpitantium besilate (75), pinaverium bromide (32), pirdonion
bromide (28), prajmalium bitartrate (23), pranolium chloride (32), pretamazium iodide
(29), propagermanium (65), prosipidium chloride (22), pyritidium bromide (16), pyrvinium
chloride (6), quindonium bromide (14), quinucium bromide (40), repagermanium (63),
rimazolium metilsulfate (26), roxolium metilsulfate (33), samarium (153Sm) lexidronam
(74), sepantronium bromide (105), sevitropium mesilate (56), spirogermanium (43),
stilbazium iodide (13), thenium closilate (12), tietropium bromide (42), tolonium chloride
(4), trazium esilate (54), trethinium tosilate (14), troxiontos tosilate (13), troxypyrrolium
tosilate (13)
(c) alazanine triclofenate (13) (anthelminthic), colfosceril palmitate (64) (pulmonary surfactant), dithiazanine iodide (8) (anthelminthic), hexadimethrine bromide (8) (heparin antagonist)

-izine diphenylmethyl piperazine derivatives

\[
\text{Ar} - \text{N} - \text{N}^+ \text{R}
\]

(a) antihistamincs: G.2.0.0: buclizine (4), cetirizine (51), chlorcyclizine (1), clocinizine (15), cyclizine (1), efletirizine (71), elbanizine (60), flotrenizine (48), levo cetirizine (78), lomerizine (68), pibaxizine (62), trenizine (48)

homochlorcyclizine (10) (serotonin antagonist)

tranquillizers: etodroxizine (18), hydroxyzine (6)

various: benderizine (40) (antiarrhythmic), declozizine (19) (respiratory insufficiency), ropizine (36) (anticonvulsant)

-rizine antihistaminics/cerebral (or peripheral) vasodilators

belarizine (36), buterizine (42), cinnarizine (11), dotarizine (50), flunarizine (22), lifarizine (66), tagorizine (72), tamolarizine (66), trelnarizine (62)

chemically related: pipoxizine (32) (respiratory insufficiency)

(b) phenothiazine derivatives: chloracyzine (12) (vasodilator), fluacizine (25) (sedative), moracizine (25) (antiarrhythmic), tiracizine (62) (antiarrhythmic)

benzilate esters: benactyzine (6) (tranquillizer), benaprizine (26) (anti-parkinsonian)

phenylpiperazine: dimetholizine (10) (antiallergic), dropropizine (18)/levodropropizine (64) (antitussive) antibotic "cef": cefatrizine (34)

pyrazine derivatives: ampyzine (15) (central nervous stimulant), triampyzine (15) (anticholinergic)

indoloquinolines (anticholinergic): metoquizine (17), toquizine (17)

(c) medibazine (16)
-kacin antibiotics, kanamycin and bekamycin derivatives (obtained from *Streptomyces kanamyceticus*)

S.6.3.0 (USAN: antibiotics obtained from *Streptomyces kanamyceticus* (related to kanamycin))

![Chemical structure of kanamycin](image)

(a) amikacin (30), arbekacin (56), butikacin (4l), dibekacin (31), propikacin (43)

(c) bekamycin (24), kanamycin (10)

other aminoglycoside antibiotics:

*Strept. griseus*: dihydrostreptomycin (1) (semisynthetic), streptomycin (1), streptoniazid (13) (semisynthetic)

*Strept. tenebrarius*: apramycin (31), nebramycin (19) (mixture of several antibiotics, including apramycin and tobramycin), tobramycin (28)

*Bacillus circularis*: butirosin (25)

-kalant potassium channel blockers

H.2.0.0 (USAN: potassium channel antagonists)

(a) adekalant (83), almokalant (64), clamikalant (81), inakalant (95), nifekalant (75), pinokalant (82), terikalant (66), vernakalant (96)

-kalim potassium channel activators, antihypertensive

H.3.0.0 (USAN: potassium channel agonists)

(a) aprikalim (64), bimakalim (64), cromakalim (58), levermakalim (66), emakalim (66), mazokalim (75), rilmakalim (65), sarakalim (81)
-kef-  enkephalin agonists

(USAN: enkephalin agonists (various indications))
casokefamide (65), frakefamide (81), metenkefalin (97), metkefamide (44)

-kin  interleukin type substances

S.7.0.0
(a) IL-1 : -nakin interleukin-1 analogues and derivatives
-ona kin: interleukin-1 α analogues and derivatives: pifonakin (77)
-benakin: interleukin-1 β analogues and derivatives: mobenakin (72)

IL-2 : -leukin interleukin-2 analogues and derivatives: adargileukin alfa (89), aldesleukin (63), celmoleukin (65), denileukin diftitox (78), teceleukin (54)

pegaldesleukin (74), tucotuzumab celmoleukin (95)

IL-4 : -trakin interleukin-4 analogues and derivatives: binetrakin (82)

IL-6 : -exakin interleukin-6 analogues and derivatives: atexakin alfa (72)

IL-8 : -octakin interleukin-8 analogues and derivatives: emoctakin (74)

IL-10 : -decakin interleukin-10 analogues and derivatives: ilodecakin (81)

IL-11 : -elvekin interleukin-11 analogues and derivatives: oprelvekin (76)

IL-12 : -dodekin interleukin-12 analogues and derivatives: edodekin alfa (79)

IL-13: -tredekin interleukin-13 analogues and derivatives: cintredekin besudotox (92)

IL-18 : -octadekin interleukin-18 human analogues and derivatives: iboctadekin (92)

tadekinig alfa (90) (fraction of IL-18 human)

Il-21 -enicokin interleukin-21 human analogues and derivatives: denenicokin (99)

(c) IL-3: -plestim interleukin-3 analogues and derivatives:
muplestim (72), daniplestim (76)

-kinra  interleukin receptor antagonists

S.7.0.0
IL-1 -nakinra interleukin-1 receptor antagonists: anakinra (72)

IL-4 -trakinra interleukin-4 receptor antagonists: pitrakinra (84)
-kiren  renin inhibitors

H.3.0.0

(a) aliskiren (83), ciprokiren (69), ditekiren (62), enalkiren (61), remikiren (66), terlakiren (66), zankiren (70)

-lefacept  see -cept

-leukin  see -kin

-lisib  phosphatidylinositol 3-kinase inhibitors, antineoplastics

L.0.0.0  (USAN: phosphatidylinositol 3-kinase inhibitors)

acalisib (109), apitolisib (108), buparlisib (106), copanlisib (108), dactolisib (107), idelalisib (107), panulisib (109), pictilisib (107), pilaralisib (108), recilisib (108)

-listat  see -stat

-lubant  leukotriene B₄ receptor antagonists

U.3.0.0  (USAN: leukotriene receptor antagonists (treatment of inflammatory skin disorders))

(a) amelubant (85), moxilubant (78), ticolubant (76)

-lukast  leukotriene receptor antagonists, see -ast

-lutamide  non-steroid antiandrogens

Q.2.3.1

(a) bicalutamide (70), enzalutamide (107), flutamide (33), nilutamide (56), topilutamide (91)

(b) aceglutamide (15)

-lutril  see -tril
-mab monoclonal antibodies (see also Annex 3)

S.7.0.0

-amab rat origin
-emab hamster origin
-imab primate origin
-omab mouse origin:

b(a) bacterial: edobacomab (69)

col(l) colon: edrecolomab (74), nacolomab tafenatox (71)

-go(v) ovary (tumours): abagovomab (95), igovomab (74), oregovomab (86)

l(i) lymphocyte: afelimomab (72), dorlimomab aritox (66), elsilimomab (89), enlimomab (70), enlimomab pegol (77), faralimomab (76), gavilimomab (84), inolimomab (71), maslimomab (66), nerelimomab (76), odulimomab (73), telimomab aritox (66), vepalimomab (80), zolimomab aritox (69)

c(i) cardiovascular: biciromab (66), imciromab (66)

-le(s) inflammatory lesions: besilesomab (92), lemalesomab (84), sulesomab (75), technetium (99mTc) fanolesomab (86)

pr(o) tumour (prostate): capromab (70)

t(u) tumour (miscellaneous): altumomab (68), anatumomab mafenatox (79), arcitumomab (74), bectumomab (75), blinatumomab (100), detumomab (70), epitumomab (82), epitumomab cituxetan (89), ibrutimomab tiuxetan (81), minretumomab (80), mitumomab (82), moxetumomab pasdotox (102), naptumomab estafenatox (96), racotumomab (100), satumomab (67), solitomab (106), taplitumomab paptox (84), technetium (99mTc) nofetumomab merpentan (76), technetium (99mTc) pintumomab (75), tenatumomab (98), tositumomab (80)

Others: catomaxomab (92), ertumaxomab (92)

-umab human origin:

b(a) bacterial: nebacumab (66), raxibacumab (92)

c(i) cardiovascular: alirocumab (107), enoticumab (107), evolocumab (108), icrucumab (104), inclacumab(106), nesvacumab (108), orticumab (107), ramucirumab (100), vesencumab (104)
\( f(u) \) **fungal:** efungumab (95)

\( k(i) \) **interleukin:** briakinumab (101), canakinumab (97), fezakinumab (101), guselkumab (109), secukinumab (102), sirukumab (105), tralokinumab (102), ustekinumab (99)

\( l(i) \) **immunomodulator:** adalimumab (82), anifrolumab (109), atorolimumab (80), belimumab (89), bertilimumab (88), brodalumab (105), carlumab (104), dupilumab (108), eldelumab (109), foralumab (103), fresolimumab (101), golimumab (91), ipilimumab (94), lerdelimunab (83), lirilumab (107), mavrilimumab (102), metelimumab (86), morolimumab (79), namilumab (104), nivolumab (107), oxelumab (103), placulumab (107), sarilumab (106), sifalimumab (101), tabalumab (105), tremlimumab (97), urelumab (104), zanolimumab (90), ziralimumab (84)

\( n(e) \) **neural:** atinumab (104), fasinumab (107), fulranumab (104), gantenerumab (108)

\( s(o) \) **bone:** denosumab (94)

\( tox(a) \) **toxin as target:** actoxumab (107), bezlotoxumab (107), tosatoxumab (109)

\( t(u) \) **tumour:** adecatumumab (90), anetumab ravtansine (109), cixutumumab (100), conatumumab (99), daratumumab (101), drozitumab (103), duligotumab (107), dusgitumab (108), enfortumab vedotin (109), fgitumumab (100), flanvotumab (106), ganitumab (103), glembatumumab (102), intetumumab (101), iratumumab (94), lexatumumab (95), lucatumumab (98), mapatumumab (93), narratumab (105), necitumumab (100), ofatumumab (93), olaratumab (103), patritumab (106), panitumumab (96), pritumumab (89), radretumab (104), rilotumumab (101), robatumumab (100), seribantumab (108), tarextumab (109), teprotumumab (108), tovetumab (109), vantictumab (109), votumumab (70), zalutumumab (93), yttrium \( ^{90Y} \) clivatuzumab tetraxetan (102)

\( v(i) \) **viral:** exbivirumab (91), foravirumab (99), libivirumab (91), rafivirumab (99), regavirumab (71), sevirumab (66), suvizumab (102), tuvirumab (66)

**Other:** bimagrumab (108), stavulumab (94), roledumab (103)

**-ximab**

**chimeric origin**

\( b(a) \) **bacterial:** pagibaximab (93)

\( c(i) \) **cardiovascular:** abciximab (70), volociximab (93)

\( l(i) \) **immunomodulator:** basiliximab (76), clenoliximab (77), galiximab (89), infliximab (77), keliximab (76), lumiliximab (90), priliximab (72), teneliximab (87), vapaliximab (87)

\( me(l) \) **melanoma:** ecromeximab (87)
**t(u)** tumor: amatuximab (104), bavituximab (95), brentuximab vedotin (103), cetuximab (82), coltuximab raltansine (109), dinutuximab (109), ensituximab (103), futuximab (107), girentuximab (101), indatuximab raltansine (105), iodine $^{124}\text{I}$ girentuximab (101), margetuximab (109), pirituximab (108), rituximab (77), setoximab (108), siltuximab (100), ublituximab (104), zatuximab (107)

**-xizumab** chimeric/humanized: otelixizumab (98), ontuxizumab (109)

**-zumab** humanized origin

**anib** angiogenesis inhibitor: ranibizumab (90)

**b(a)** bacterial: tefibazumab (92)

**c(i)** cardiovascular: alacizumab pegol (98), bevacizumab (83), caplacizumab (106), concizumab (108), demcizumab (107), etaracizumab (99), idarucizumab (109), lodelcizumab (108), tadocizumab (94)

**k(i)** interleukin: anrakinzumab (98), clazakizumab (107), enokizumab (104), gevokizumab (104), ixekizumab (105), lebrikizumab (101), olokizumab (103), perakizumab (108), tildrakizumab (108)

**l(i)** lymphocyte: apolizumab (87), aselizumab (88), benralizumab (102), cedelizumab (77), certolizumab pegol (90), daclizumab (78) (previously: dacliximab), eculizumab (87), efalizumab (85), erlizumab (84), etrolizumab (104), fontolizumab (87), ibalizumab (97), itolizumab (103), lambrolizumab (109), lampalizumab (107), ligelizumab (107), mepolizumab (81), mogamulizumab (104), natalizumab (79), ocrelizumab (94), omalizumab (84), ozoralizumab (105), palivizumab (79), pascolizumab (87), pateclizumab (105), pexelizumab (85), pidilizumab (108), quilizumab (106), relizumab (85), rontalizumab (101), rovelizumab (81), ruplizumab (83), samalizumab (103), sipilizumab (87), talizumab (89), teplizumab (97), tocilizumab (90), toralizumab (87), tregalizumab (104), vatselizumab (105), vedolizumab (100), visilizumab (84)

**n(e)** neural: bapineuzumab (93), crenezumab (105), ozanezumab (108), ponezumab (104), solanezumab (107), tanezumab (99)

**s(o)** bone: blosozumab (105), romosozumab (106)

**tox(a)** toxin as target: urtoxazumab (90)

**t(u)** tumor: (miscellaneous): abituzumab (109), alemtuzumab (83), bivatuzumab (83), cantuzumab mertansine (105), cantuzumab raltansine (105), citatuzumab bogatox (99), codrituzumab (109), dacetuzumab (98), dalotuzumab (107), elotuzumab (100), enavatuzumab (104), epratuzumab (82), farletuzumab (100), ficlatuzumab (105), gemtuzumab (83), immatuzumab (107), inotuzumab ozogamicin (92), labetuzumab (85), lintuzumab (76), lorvotuzumab mertansine
(103), matuzumab (88), milatuzumab (98), nimotuzumab (94), obinutuzumab (109), ocaratuzumab (107), onartuzumab (104), oportuzumab monatox (100), parsatuzumab (107), pertuzumab (89), pinatuzumab vedotin (108), polatuzumab vedotin (108), sibrotuzumab (81), simtuzumab (107), sontuzumab (94), tigatuzumab (98), trastuzumab (78), trastuzumab emtansine (103), tucotuzumab celmoleukin (94), veltuzumab (98), vorsetuzumab (107), vorsetuzumab mafodotin (107), yttrium (90Y) tacatuzumab tetraxetan (93)

\[ v(i) \]

**viral:** felvizumab (77), motavizumab (95)

(c) muromonab CD3 (59)

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**-mantamine**

- adamantane derivatives

(USAN: -mantadine or -mantine: antivirals/antiparkinsonians (adamantane derivatives))

-**antiviral:** S.5.3.0: amantadine (15), rimantadine (17), somantadine (51), tromantadine (28)

-**antiparkinsonian:** E.2.0.0: carmantadine (31), dopamantine (31), memantine (35)

-**immunostimulant:** S.7.0.0: idramantone (71)

(b) **anthelminthic:** S.3.l.0: dimantine (14)

(c) adafenoxate (48) (nootropic agent), *adamexine* (36) (mucolytic), adapalene (64) (antiacne agent), adaprolol (63) (β-adrenoreceptor antagonist), adatalserin (70) (serotonin receptor antagonist), amantanium bromide (39) (disinfectant), amantocillin (17) (antibiotic), arteplone (97) (antimalarial), bolmantalate (16) (anabolic), meclinertant (88) (neurotensin antagonist), mantabegron (88) (β3-adrenoreceptor agonist), saxagliptin (92) (antidiabetic), vildaglptin (90) (antidiabetic)

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**-mapimod** see -imod

**-mastat** see -stat

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**-meline**

**cholinergic agents (muscarnine receptor agonists/partial antagonists used in the treatment of Alzheimer's disease)**

E.1.0.0 (USAN: cholinergic agonists (arecoline derivatives used in the treatment of Alzheimer's disease))

![Chemical Structure](image)

alvameline (79), cevimeline (76), itameline (77), milameline (74), sabcomeline (76), tazomeline (77), xanomeline (70)
**mer- or -mer-**

(d) **1**mercury-containing drugs, antimicrobial or diuretic

(a) **S.2.2.0 antimicrobial:** meralein sodium (13), merbromin (1), mercurobutol (1), otimerate sodium (51), phenylmercuric borate (4), sodium timerfonate (13), thiomersal (1)

1*mer-* and -*mer-* can be used for any type of substances and are no longer restricted to use in INNs for mercury-containing drugs

**N.1.3.0 diuretic:** chlormerodrin (4), chlormerodrin (197Hg) (24), meralluride (1), mercaptomerin (1), mercuderamide (1), mercumatin sodium (4), mercurophylline (1), merisoprol (197Hg) (24) (diagnostic), mersaly (4)

(b) difemerine (17) (spasmolytic), dimercaprol (1) (antidote, -SH group), lomerizine (68), (cerebral vasodilator), mercaptopurine (6) (cytostatic, -SH group), nifurmerone (16), pemerid (25), suxemerid (25) (antitussive)

(c) hydrargaphen (10)

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**-mer polymers**

(a) amilomer (33), azoximer bromide (97), bixalomer (103), cadexomer (60), carbetimer (50), carberomer (21), crilanomer (53), dextranomer (33), eldexomer (60), exatecan alideximer (89), firtecan peglumer (108), hemoglobin glutamer (80), hemoglobin raffimer (89), leuciglumer (68), maletamer (14), opsinamer (108), patiromer calcium (106), poloxamer (34), porfimer sodium (64), sevelamer (77), surfomer (44), tolevamer (88), zinostatin stimalamer (74)

(b) succimer (42)

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**-mesine sigma receptor ligands**

USAN

cutamesine (100), igmesine (68), panamesine (73), siramesine (81)

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**-mestane aromatase inhibitors**

USAN

L.0.0.0 /Q.2.1.0

(USAN: antineoplastics, aromatase inhibitors)
atamestane (54), exemestane (65), formestane (66), minamestane (64), plomestane (66)
-metacin (x)  anti-inflammatory, indometacin derivatives

A.4.2.0  (BAN: anti-inflammatory substances of the indomethacin group)
(USAN: -metacin: anti-inflammatory substances (indomethacin type))

(a)  acemetacin (32), cinmetacin (24), clometacin (27), delmetacin (48) (originally demetacin (42)),
duometacin (27), glucametacin (32), indometacin (13), niometacin (33), oxametacin (37),
pimetacin (47), proglumetacin (35), sermetacin (36), talmetacin (46), zidometacin (39)

other anti-inflammatory, indole derivatives: etoprindole (22), indopine (12), indoxole (17),
nictindole (28)

-met(h)asone see pred

-micin  aminoglycosides, antibiotics obtained from various Micromonospora

(S.6.5.0)  (USAN: antibiotics (Micromonospora strains))

astromicin (44), betamicin (38), etisomicin (47), evernimicin (82), fidaxomicin (109),
genamicin (22), isepamicin (54), maduramicin (52), megalomicin (37), micronicmicin (45),
microsamicin (58), netilmicin (36), ozogamicin (83), pentisomicin (41), plazomicin (106),
repromicin (37), rosaramicin (41) (prev. rosamicin), semduramicin (60), sisomicin (25)

-mifene see -ifene

-milast see -ast

mito- (d) antineoplastics, nucleotoxic agents

L.0.0.0

(a)  mitobronitol (20), mitocarcin (25), mitoclomine (18), mitoflaxone (60), mitogillin (17),
mitoguazone (20), mitolactol (26), mitomalcin (19), mitomycin (26), mitonafide (40),
mitopodozide (17), mitoquidone (54), mitosper (24), mitotane (21), mitotename (17),
mitoxantrone (44), mitozolomide (51)

(c)  mitindomide (48)
-monam  monobactam antibiotics  
S.6.0.0

(a)  carumonam (51), gloximonam (54), oximonam (54), pirazmonam (58), tigemonam (57)
(c)  aztreonam (48)

-morelin  see -relin

-mostat  see -stat

-mostim  see -stim

-motine  antivirals, quinoline derivatives  
S.5.3.0

(a)  famotine (23), memotine (22)

-moxin (d)  monoamine oxidase inhibitors, hydrazine derivatives  
C.3.1.0

(a)  benmoxin (20), cimemoxin (17), domoxin (14), octamoxin (15)
(c)  carbenzide (11), etryptamine (12), fenoxypazine (12), iproclozide (13), iproniazid (1), isocarboxazid (11), mebanazine (15), nialamide (10), pargyline (13), phenelzine (10), pheniprazine (11), tranylcypromine (11)

-mulin  antibacterials, pleuromulin derivatives  
S.6.0.0

(a)  azamulin (54), pleuromulin (35), retapamulin (91), tiamulin (35), valnemulin (74)
(b)  nonathymulin (56), thmostimulin (45)
-mustine antineoplastic, alkylating agents, (β-chloroethyl)amine derivatives

L.2.0.0 (USAN: antineoplastic agents (chlorethylamine derivatives))

(a) alestramustine (68), ambamustine (60), atrimustine (61), bendamustine (48), bofumustine (44), carmustine (24), ditionmustine (49), ecomustine (61), elmustine (49), estramustine (24), fotemustine (57), galamustine (61), laromustine (98), lomustine (27), mannomustine (8), neptamustine (48) (originally pentamustine (45)), nimustine (37), prednimustine (31), ranimustine (55), semustine (27), spiromustine (47), tallimustine (68), tauromustine (50), uramustine (13)

(c) canfosfamide (92), chlorambucil (6), chlormethine (1), chlornaphazine (1), cyclophosphamide (10), defosfamide (12), glufosfamide (77), ifosfamide (23), mafosfamide (51), melphalan (8), melphalon flufenamide (105), metamelfalan (41), mitoclomine (18), mitotenesmine (17), palifosfamide (99), perfosfamide (66), sarcolysin (17), sufosfamide (36), trichlormethine (11), trofosfamide (23)

-mycin (x) antibiotics, produced by Streptomyces strains (see also -kacin)

S.6.0.0 (USAN: antibiotics, Streptomyces strains)

(a) alvespimycin (96), amfomycin (12), antelmycin (15), apramycin (31), avilamycin (46), azalomycin (26), azithromycin (58), bambermycin (21), bekamycin (24), berythromycin (26), bicozamycin (38), biniamycin (23), bluensomyacin (14), capreomycin (12), carbomycín (1), cethromycin (87), clarithromycin (59), clindamycin (21), coamycín (15), daptomycin (58), dihydrostreptomycin (1), diproleandomycin (33), dirithromycin (53), efrotomycín (53), endomycin (6), enramycin (23), enviromycin (31), erythromycin (4), estomycín (14 - deleted in List 28), flurithromycin (51), fosfomycin (25), fosmidomycin (46), gamithromycin (95), ganebrofungin (68), hachimycin (23), heliomyacin (25), hydroxymycin (8 - deleted in List 28), josamyacin (23), kanamycin (10), kitasamycin (13), laidlomyacin (61), leithromycin (65), lincomycin (13), lividomycin (32), maridomycin (32), midecamycin (30), mikamycin (17), mirincamycin (31), mocimycin (28), modithromycin (101), natamyacin (15), nebramyacin (19), neomycin (1), neutramycin (15), oleandomycin (6), paldimycin (55), paromomycin (10), paulomycin (47), pirlimycin (47), primycin (38), pristinamycin (12), ranimycin (20), relomycin (15), retaspiromycin (99), ribostamycin (27), rifamycin (13), rokitamycin (53), roxithromycin (54), salinomycin (37), sedecamycin (55), solithromycin (104), spectinomycin (13), spiramycin (6), stallimycin (30), steffimycin (20), streptomycin (1), surotomycin (107), tanespimycin (96), telithromycin (80), terdecamycin (65), tobramycin (28), tropleandomycin (24), trospectomycin (53), tulathromycin (87) (vet.), vancomycin (6), viomycin (4), virginamycin (18)

antibiotics, antineoplastics:
ambomycin (13), antramycin (17), azotomycin (13), bleomycin (23), cacticomycin (15), dactinomycin (18), duazomycin (13), lucimycin (13), mitomycin (26), nogalarnycin (16),
olivomycin (18), peliomyacin (15), peplomycin (44), plicamycin (50) (previously mithramycin (16)), porfiromycin (15), puromycin (15), rufocromomycin (12), sparsomycin (13), talisomycin (41)

antibiotics, antineoplastics, antibacterial:
cirolemycin (21)

antibiotic, antifungal:
hamycin (17), lidimycin (20), rutamycin (14)

(c) antibiotic, antibacterial:
aspartocin (11), azidamfenicol (14), cetofenicol (14), chloramphenicol (1), cloramfenicol pantotenate complex (14), cycloserine (6), novobiocin (6), ostreogrycin (6), rifamide (15), rifampicin (17), streptoniazid (13), streptovarycin (6), thiamphenicol (10), tylosin (16)

antibiotic, antifungal:
amphotericin B (10), candidicin (17), filipin (20), kalafungin (20), nystatin (6), viridofulvin (16)

antibiotic, antineoplastic:
daunorubicin (20), mitomalcin (19), streptonigrin (14) (deleted in List 33)

see also -rubicin

---

nab cannabinoid receptors agonists

(USAN: -nab; or -nab-: cannabinol derivatives)

![Cannabinol Derivative](image)

(a) cannabinol (23), dronabinol (51), menabitan (49), nabazenil (49), nabilone (49), nabitan (42), naboctate (45), nonabine (47), pirnabin (41), tedalinab (103), tinabinol (49)

(b) fenabutene (26), guanabenz (26), muromonab-CD3 (59), nabumetone (44), prinaberel (95)

---

-nabant cannabinoid receptors antagonists

E.0.0.0

(a) drinabant (99), giminabant (107), ibipinabant (99), otenabant (99), rimonabant (83), rosonabant (97), surinabant (93), taranabant (97)

---

-nacept see -cept
-nakin  
see -kin

-nakinra  
see -kinra

**USAN**

**opioid receptor antagonists/agonists related to normorphine**

A.4.1.0 (USAN: narcotic agonists/antagonists (normorphine type))

B.2.0.0

![Chemical structure](image)

- methylnaltrexone bromide (96), nalbuphine (21), naldemedine (105), nalfurafine (87), nalmefene (49) (originally nalmetrene (47)), nalmexone (19), nalorphine (1), naloxegol (105), naloxone (13), naltalimide (107), naltrexone (29)

(b) nalidixic acid (13), naluzotan (101)

-naritide  
see -tide

-navir  
see vir

-nermin  
see -ermin

-nercept  
see -cept

-nertant  
see -tant

-netant  
see -tant

-nicate  
see nico-

**USAN**

**nicotinic acetylcholine receptor partial agonists / agonists**

E.1.1.2

(a) altinicline (82), dianicline (93), facinicline (105), ispronicline (93), pozanicline (100), rivanicline (93), sofinicline (100), tebanicline (86), varenicline (89)
nico- or nic-
nicotinic acid or nicotinoyl alcohol derivatives
or ni-

\[
\text{\(\text{\text{nico}}\): nicoboxil (43), nicoclolate (29), nicocodine (12), nicocortonide (40), nicodicodine (15), nicofibrate (31), nicofuranose (14), nicofurate (28), nicomol (23), nicomorphine (7), nicopholine (1), nicorandil (44), nicothiazine (10), nicotinamide (4), nicotinic acid (4), nicotredole (72), nicoxamat (44), nikethamide (4)}
\]

inositol nicotinate (16), xantinol nicotinate (16)

\[
\text{\(\text{\text{nic}}\): nicafenine (40), nicainoprol (46), nicametate (15), nicardpine (42), nicanartine (72), nicergoline (26), niceritol (23), niceverine (15), nictindole (28), nizofenone (44)}
\]

\[
\text{\(\text{\text{ni}}\): nialamide (10), niaprazine (24), nifenazone (15), niometacin (33), niprofazone (29), nixylic acid (17)}
\]

-nicate:

antithermocholestaemic and/or vasodilating nicotinic acid esters

H.4.0.0
F.2.2.0

(a) ciclonicate (33), derpanicate (58), estrapronicate (34), glunicate (51), hepronicate (22), micinicate (44), panteunicate (56), sorbinicate (33)

(b) nitrile derivative: nimazone (21)
other: nifungin (24), nimidane (34), nisbuterol (38)

(c) NO₂ - derivatives: acenocoumarol (6) (anticoag.), azathioprine (12) and tiamiprine (15) (antimetabolites), bronopol (14) (antiseptic), chloramphenicol (1) (antibiotic), clonazepam (22) (sed.), flurgantel (25) (anthelmintic), flutamide (33) (nonsteroid anti-androgen)

-nidazole (x) antiprotozoals and radiosensitizers, metronidazole derivatives

S.3.3.0
Y.0.0.0

(USAN: antiprotozoal substances (metronidazole type))

(a) abunidazole (52), azanidazole (38), bamnidazole (37), benznidazole (31), carnidazole (32), doranidazole (90), etanidazole (57), fexnidazole (37), flortanidazole (18F) (108), flunidazole (21), ipronidazole (21), metronidazole (11), misonidazole (38), moxnidazole (33), ornidazole (28), panidazole (24), pimonidazole (57), pirinidazole (32), propenidazole (45), ronidazole (18), satranidazole (48), secnidazole (30), sulnidazole (33), ternidazole (34), tinidazole (21), tivanidazole (48)

(c) dimetridazole (17), nimorazole (22), stirimazole (25)
-nidine  see -onidine

nifur- (d)  5-nitrofuran derivatives
S.2.1.0

(a)  nifuradene (16), nifuraldezone (17), nifuralide (34), nifuratel (17), nifuratrone (24), nifurdazil (16), nifurethazine (10), nifurfoline (20), nifurimide (18), nifurizone (22), nifurmazole (22), nifurmerone (16), nifuroazine (36), nifuroxazide (14), nifuroxime (11), nifurpipone (20), nifurpirinol (22), nifurprazine (16), nifurquinazol (18), nifursemizone (16), nifursol (20), nifurthiazole (14), nifturimox (21), nifurtoinol (36), nifurvidine (17), nifurzide (37)

(c)  furalazine (13), furaltadone (17), furazolidone (13), furazolium chloride (15), furmexadone (8), levofuraladone (17), nitroxyzone (6), nihydrazone (10), nitrofural (1), nitrofurantoin (11), thiofuradene (11)

-nil see -azenil, also for -carnil, -quinil

nitro-  NO₂ - derivatives

-or nitr- or ni-
or ni- or -ni-

-nifur- all INN of this series (see under nifur-)

-nitro-: nitroclofene (41), nitrocycline (14), nitrodan (15), nitrofural (1), nitrofurantoin (11), nitromifene (33), nitroscanate (33), nitrosulfathiazole (1), nitrocinil (19), nitroxine (15)

-nitr-: nitracrine (35), nitrafudam (40), nitramisole (33), nitraquazone (53), nitrazepam (16), nitrefazole (46), nitricholine perchlorate (6)

-nit- and -nit-: nitarsone (17), ranitidine (41)

-ni-: nibroxane (35), niclofolan (20), niclosamide (13), nirdazol (6), niferan (22), nihydrazone (10), nimesulide (44), nimorazole (22), niridazole (17)

-ni-dipine: nicardipine (42), nifedipine (27), niludipine (38), nisoldipine (42), nitrendipine (42), vatamidipine (77)

-nidazole: for INNs of this series see under -nidazole
-nixin anti-inflammatory, anilinonicotinic acid derivatives

A.4.2.0

\[
\text{H} \quad \text{N} \quad \text{C} \quad \text{O} \quad \text{H}
\]

(a) butanixin (32), clonixin (22), diclonixin (31), flunixin (31), isonixin (34), metanixin (31)

(c) clonixeril (22), niflumic acid (17), nixylic acid (17)

(-)nonacog see -cog

-octakin see -kin

(-)octocog see -cog

-ol (d) for alcohols and phenols

-olol (x) \(\beta\)-adrenoreceptor antagonists

E.5.2.0 (BAN: beta-adrenoreceptor antagonists) (USAN: beta-blockers (propranolol type))

\[
\text{Ar} \quad \text{O} \quad \text{H} \quad \text{OH} \quad \text{N} \quad \text{R}
\]

aromat. ring \(-\text{O}-\text{CH}_2-\text{CHOH-CH}_2-\text{NH-}\text{R}\)

(a) acebutolol (28), adaprolol (63), adimolol (50), afurolol (40), alprenolol (19), ancarolol (47), arnolol (56), arotinolol (48), atenolol (33), befunolol (39), betaxolol (40), bevantolol (36), bisoprolol (48), bometolol (42), bopindolol (42), bornaprolol (46), bucin dolol (43), bucumolol (35), bufetolol (30), bunolol (22), bupranolol (27), butocrolol (38), butofilolol (40), carazolol (36), carpi dolol (42), carticolol (35), celiprolol (35), cetamolol (47), cicloprolol (48), cinamolol (44), cloranolol (41), crinolol (41) (replaced by pacrinolol (44)), dexnebivolol (98), dextronolol (21), diacelonol (41), draquinolol (54), ecastolol (56), epanolol (52), ericolol (50), esatenolol (76), esmolol (50), exaprolol (32), falintolol (53), flestolol (53), flusoxolol (50), idrop ranolol (31), imidolol (49) (replaced by adimolol (50)), in denolol (37), indopranolol (48), iprocrolol (39), isoxupalol (45), landiolol (75), levobetaxolol (61), levobunolol (42), levomorphol (58), levonebivolol (98), mepindolol (36), metipranolol (38), metoprolol (30), meprolol (36), nadolol (34), nadoxolol (28), nafetolol (39), nebivolol (56), nipradilol (50) (previously nipradolol (49)), oxprenolol (20), pacrinolol (44), paf enolol (46), pama tolol (36), pargolol (36), penbutolol (25), penirolol (36), pindolol (23), pirepolol (48), practolol (23), primidolol (42), procinolol (25), propranolol (15), ridazolol (51), ronactolol (57), soquinolol (43), spire ndolol (46), talinolol (28), tazolol (31), teopro lol (43), tertatolol (48), tienoxolol (56), tilisolol (57), timolol (29),
tiprenolol (23), tolamolol (29), toliprolol (28), trigevolol (56), xibenolol (48), xipranolol (22), zoleprodolol (102)

(b) Q.2.3.0: stanozolol (18) (anabolic steroid)

-alol aromatic ring -CH-CH$_2$-NH-R related to -olols

E.5.2.0 (USAN: combined alpha and beta blockers)

(a) amosulalol (50), bendacalol (59), brefonalol (56), bufuralol (31), dexsotalol (74), dilevalol (50), labetalol (35), medroxalol (43), nifenalol (22), pronetalol (14), sotalol (18), sulfinalol (41)

(c) butidrine (16)

-olone see pred

-onakin see -kin

-one (d) ketones

(a) 638 (approx. 7.3 %) INNs ending in -one in Lists 1-109 of proposed INNs

-onide steroids for topical use, acetal derivatives

Q.3.0.0

(a) acrocinonide (27), amcinonide (33), budesonide (37), ciclesonide (62), cicortonide (28), ciprocinonide (38), desonide (24), dextrbudesonide (80), drocinonide (29), flucolorolone acetonide (22), fluocionolone acetonide (11), flumoxonide (38), fluocinonide (25), halcinonide (29), itrocinonide (62), nicocortonide (40), procinonide (38), rofleponide (72), tralonide (27), triamcinolone benetonide (36), triamcinolone furetonide (36), triamcinolone hexacetonide (15), triclonide (30)

(c) amcinafal (25), amcinafide (25)

-onidine antihypertensives, clonidine derivatives

H.3.0.0

(a) apraclonidine (59) (control of intraocular pressure), benclonidine (42), brimonidine (66), clonidine (40), flutonidine (31), moxonidine (48), piclonidine (44), tolonidine (28) related: alinidine (40) (analgesic)
-nidine
H.3.0.0

(a) related antihypertensives: betanidine (13), indanidine (50), rilmenidine (57), tiamenidine (28)

(b) muscle relaxant: tizanidine (43)
topical anti-infective: octenidine (43), piritenidine (57)
antibacterial: sulfaguanidine (4)
vetirinary coccidiostatic: robenidine (25)

(c) dexlofexidine (48), levlofexidine (48), lofexidine (33)

-onium see -ium

-opamine see -dopa

-orex anorexic
M.1.0.0 (BAN: anorexic agents, phenethylamine derivatives)
(USAN: anorexiant)

(a) acridorex (21), amfepentorex (16), aminorex (14), benfluorex (25), clobenzorex (18),
clofex (16), clominorex (14), difemetorex (41), etolorex (20), fenisorex (29), fenproporex
(17), flucetorex (30), fludorex (19), fluminorex (14), formetorex (14), furfrenorex (16),
indanorex (30), mfenorex (19), morforex (26), oxifentorex (20), pentorex (16), picilorex
(40), tiflorex (34)

(b) almorexant (98), filorexant (108), suvorexant (105)

(c) bupropion (84) (replaces amfebutamone (31)), amfecloral (12), amfepramone (13),
amfetamine (55), amfetaminil (40), benzefamine (55), brolamfetamine (55),
chlorphentermine (11), clortermine (22), dexamfetamine (55), dextamfetamine (54),
dimetamfetamine (38), etilamfetamine (40), fenbutrazate (12), fenfluramine (14),
hexapradol (12), levamfetamine (12), levmetamfetamine (83), levoflurenfluramine (57),
lisdexamfetamine (94), mephertermine (6), ortetamine (13), phendimetrazine (11),
phenmetrazine (6), phentermine (11)

 orphan opioid receptor antagonists/agonists, morphinan derivates
A.4.1.0
B.2.0.0 (USAN: -orphan, -orphan-: narcotic antagonists/agonists (morphinan derivatoves))

(a) A.4.1.0: butorphanol (31), dextromethorphan (1), dextrorphan (1), dimemorfan (30),
ketoftanol (49), levomethorphan (1), levophenacylmorphan (9), levorphanol (4),
methylsamidorphan chloride (109), norlevorphanol (9), oxilorphan (31), phenomorphan (5), proxorphan (43), racemethorphan (1), racemorphan (1), samidorphan (107), xorphanol (48)

B.2.0.0: levallorphan (2)

-orph-

-orphine: acetorphine (17), alletorphine (25), buprenorphine (29), cyprenorphine (17), desomorphine (5), diprenorphine (21), etorphine (17), homprenorphine (25), methyldesorphine (5), methyldihydromorphine (5), morphine glucuronide (92), nalorphine (1), nicomorphine (7), normorphine (7)

-orphinol: hydromorphinol (11)

-orphone: conorfone (46), hydromorphone (1), oxymorphone (5), pentamorphone (60), semorphone (67)

(b) emorfazone (44), morforex (26), morpheridine (6), orphenadrine (8)

-otermin see -ermin

-ox antacids, aluminium derivatives (see also -aldrate)

-alox

(a) glucalox (13), sucralox (13)

(b) -dox antibacterials, quinazoline dioxide derivatives:

(USAN: -adox: antibacterials (quinoline dioxide derivatives))

\[
\text{carbadox (19), ciadox (44), cinoquidox (40), drazidox (24), mequidox (19), olaquindox (31), temodox (27)}
\]

-pirox antimycotics, pyridone derivatives:

\[
\text{ciclopirox (26), metipirox (26), rilopirox (56)}
\]

-xanox antiallergics, tixanox group:

(USAN: antiallergic respiratory tract drugs (xanoxic acid derivatives))

\[
\text{amlexanox (55), mepixanox (49), sudexanox (44), tixanox (37), traxanox (44)}
\]
others: acipimox (33) (antihyperlipidaemic), bifeprunox (87) (antipsychotic), cefminox (53) (antibiotic), deferasirox (86) (chelating agent), etofenprox (57) (insecticide), nifurtimox (21) (antiprotozoal), pardoprunox (96) (antiparkinsonian), sulbenox (37) (animal growth regulator), xanoxic acid (33) (bronchodilator)

-oxacin (x) antibiotic, nalidixic acid derivatives

BAN, USAN

S.5.5.0
(BAN: antibacterial agents of the cinoxacin group)
(USAN: antibacterial (quinolone derivatives))

(a) cinoxacin (32), droxacin (36), fleroxacin (56), enoxacin (49), garenoxacin (87), irloxicin (53), miloxacin (40), nemonoxacin (96), ozenoxacin (96), rosloxacin (36), tioxacin (34)
  -floxacin: alatrofloxacin (75), amifloxacin (51), avarofloxacin (109), balofloxacin (71), besifloxacin (98), binfloxacin (60), cadrofloxacin (81), cetefloxacin (68), ciprofloxacin (50), clinafloxacin (67), danofloxacin (61), delafloxacin (100), difloxacin (55), ecenofloxacin (78), enrofloxacin (56), esafl oxacin (60), fandofloxacin (78), finalefloxacin (85), gatifloxacin (74), gemifloxacin (81), grepafloxacin (68), ibafloxacin (60), levofloxacin (64), levonadifloxacin (95), lomefl oxacin (58), marfloxacin (65), merafl oxacin (69), moxfloxacin (78), nadifloxacin (64), norfloxacin (46), ofloxacin (49), olamufloxacin (79), orbitfloxacin (68), pazufloxacin (71), pefloxacin (45), pradofloxacin (84), premefloxacin (72), prulifloxacin (72), rufloxacin (57), sarafloxacin (62), sitafloxacin (75), sparfl oxacin (63), temafloxacin (58), tosufloxacin (60), trovafloxacin (73), ulifloxacin (89), vebufloxacin (69), zabofloxacin (93)

(b) itarnafloxin (103)

(c) flumequine (34), nalidixic acid (13), oxolinic acid (15), pipemidic acid (32), piromidic acid (27), metioxate (34)

-oxan(e) benzodioxane derivatives

USAN

E.5.1.0
(USAN: -oxan or -oxane: α-adrenoreceptor antagonists; benzodioxane derivatives)

(a) α-adrenoreceptor antagonists: azaloxan (52) (antidepressant), fluparoxan (58) (antidepressant), idazoxan (49) (α₂), imiloxan (52) (α₂) (antidepressant), piperoxan (1) (sympatholytic), proroxan (39)
  antihypertensives: flesinoxan (55), guabexan (32), guanoxan (15)
  tranquillizers: butamoxane (12), ethomoxane (12), pentamoxane (12)
  muscle relaxant: ambenoxan (21)
oxa, axa, ox: acoxatrine (14) (cardiovascular analeptic), axamozide (53) (neuroleptic), cinepaxadil (50) (coronary vasodilator), dioxadilol (53) (slight β-adrenoreceptor antagonist), domoxin (14), doxazosin (47), enoxamast (52) (antiallergic), spiroxatrine (14) (analgesic) related: dexefaroxan (76) (β-adrenoreceptor antagonist), efaroxan (59) (α2)

(b) amoproxan (22), nibroxane (35), razoxane (40), dextrazoxane (62), sobuzoxane (62), tolboxane (12)

(c) aplindore (92), bendacalol (59), binospironne (65), capeserod (94), eltoprazine (57), lecozotan (93), lurtotecan (50), osemozotan (87), quincarbate (31), silibinin (38), sulamserod (82)

\[ \text{USAN} \]

-oxanide see -anide

-oxef see cef-

-oxepin see -pine

\[ \text{USAN} \]

-oxetine serotonin and/or norepinephrine reuptake inhibitors, fluoxetine derivatives

(USAN: antidepressants (fluoxetine type))

C.3.0.0

\[ \text{USAN} \]

(a) atomoxetine (86), ansoxetine (58), dapoxetine (65), duloxetine (68), edivoxetine (104), esreboxetine (99), femoxetine (36), fluoxetine (34), ifoxetine (54), litoxetine (64), nisoxetine (34), omiloxetine (76), paroxetine (38), reboxetine (54), seproxetine (66), tedatioxetine (107), vortioxetine (107)

\[ \text{USAN} \]

-oxicam see -icam

-oxifene see -ifene

-oxopine see -pine

\[ \text{USAN} \]

-pafant platelet-activating factor antagonists

I.2.1.0

(a) apafant (60), bepafant (60), dacopafant (63), foropafant (75), israpafant (76), lexipafant (70), minopafant (80), modipafant (65), nupafant (70), rocepafant (71), setipafant (72), tulopafant (64)
-pamide  | diuretics, sulfamoylbenzoic acid derivatives (could be sulfamoylbenzamide)  
N.1.2.0  | (USAN: diuretics (sulfamoylbenzoic acid derivatives))

(a)  alipamide (18), besulpamide (52), clopamide (13), indapamide (29), tripamide (44), xipamide (22), zidapamide (50) (previously isodapamide (47))

(b)  chlorpropamide (8) (hypoglycemic), isopropamide iodide (8) (anticholinergic)

(c)  bumetanide (24), chlortalidone (12), clorexlone (15), furosemide (14), sulclamide (15), tiamizide (16)

-pamil  | calcium channel blockers, verapamil derivatives  
F.2.1.0  | (USAN: coronary vasodilators (verapamil type))

(a)  anipamil (49), dagapamil (52), devapamil (53), dexverapamil (65), emopamil (52), falipamil (48), gallopamil (38), levemopamil (62), nixopamil (67), ronipamil (51), tiapamil (43), verapamil (16)

(b)  related: bertosamil (64), bisaramil (60)

-parcin  | glycopeptide antibiotics  
S.6.0.0  | (a)  avoparcin (29), orientiparcin (72)

-parib  | poly-ADP-ribose polymerase inhibitors  
L.0.0.0  | iniparib (103), niraparib (107), olaparib (94), rucaparib (105), veliparib (102)
-parin  heparin derivatives including low molecular mass heparins
I.2.0.0  (USAN: heparin derivatives and low molecular weight (or depolymerized) heparins)
(a)  adomiparin sodium (104), ardeparin sodium (68), bemiparin sodium (75), certoparin sodium (70), dalteparin sodium (64), deligoparin sodium (89), enoxaparin sodium (52), heparin sodium (54), livaraparin calcium (85), minolteparin sodium (73), nadroparin calcium (65), parnaparin sodium (65), reviparin sodium (65), semuloparin sodium (99), sevuparin sodium (107), tafoparinux sodium (102), tinzaparin sodium (65)

-parinux  synthetic heparinoids
             (USAN: antithrombotic indirect selective synthetic factor Xa inhibitors)
(a)  fondaparinux sodium (83) (replaces fondaparin sodium (79)), idrabiotaparinux sodium (97), idraparinux sodium (84)

-patril/-patrilat  see -tril/-trilat

-pendyl  see -dil

-penem  analogues of penicillanic acid antibiotics modified in the five-membered ring
S.6.0.0  (USAN: antibacterials, antibiotics (carbapenem derivatives))

(a)  biapenem (69), doripenem (83), ertapenem (84), faropenem (69), imipenem (50), lenapenem (73), meropenem (60), panipenem (64), razupenem (101), ritipenem (67), sulopenem (68), tacapenem (87), tebipenem pivoxil (82), tomopenem (95)

-perfl(u)-  perfluorinated compounds used as blood substitutes and/or diagnostic agents
             (USAN: blood substitutes and/or diagnostics (perfluorochemicals))
(a)  perflotenapent (78), perflexane (82), perflisobutane (92), perflisopent (78), perflumaine (45), perflubrodec (87), perflubron (66), perflubutane (91) perflunafene (45), perflutren (82)

-peridol  see -perone

-peridone  see -perone
-perone  tranquillizers, neuroleptics, 4'-fluoro-4-piperidinobutyrophenone derivatives

C.1.0.0  
C.2.0.0  (USAN: antianxiety agents/neuroleptics ; 4'-fluoro-4-piperidinobutyrophenone derivatives)

\[
\text{\textbf{R}} \quad \text{\textbf{R'}}
\]

(a)  aceperone (14), amiperone (14), biriperone (51), carperone (24), cicarperone (28), cinuperone (53), cloroperone (38), declenperone (42), duoperone (54), fenaperone (28), fluspiperone (34), lenperone (27), melperone (34), metrenperone (56), milenperone (37), mindoperone (38), moperone (14), nonaperone (44), pipamperone (17), pirenperone (46), prideperone (54), primaperone (17), propyperone (16), roxoperone (17), setoperone (51), spiperone (17), timiperone (40)

closely related: azabuperone (34), azaperone (18), lodiperone (44), zoloperone (39)

-peridol  antipsychotics, haloperidol derivatives

benperidol (14), bromperidol (33), [clofluperol (18)], droperidol (14), [fluanisone (13)], haloperidol (10), trifluperidol (16)

-peridone  antipsychotics, risperidone derivatives

abaperidone (80), belaperidone (78), cloperidone (17), iloperidone (69), lusaperidone (82), ocaperidone (64), paliperidone (83), risperidone (57), tioperidone (37)

c)  domperidone (36), etoperidone (36) (antiemetic)

-pidem  hypnotics/sedatives, zolpidem derivatives

C.1.0.0  

alpidem (53), necopidem (66), saripidem (67), zolpidem (53)

-pin(e)  see also Pharm S/Nom 970 (tricyclic compounds)

-dipine  see -dipine

(a)  dosulepin (15)

-zepine  antidepressant/neuroleptic: C.3.2.0: dibenzepin (14), elanzepine (35), enprazepine (30), erizepine (54), mezepine (22), nuvenzepine (59), prazepine (15), propizepine (19), tilozepine (40)
tricyclic antiulcer: J.0.0.0: darenzepine (52), pirenzepine (30), siltenzepine (63), telenzepine (50), zolenzepine (48)

tricyclic anticonvulsant: A.3.1.0: carbamazepine (15), eslicarbazepine (91), etazepine (51), licarbazepine (81), oxcarbazepine (41), rispenzepine (63)

hyperthermia: amezepine (42)

-apine psychoactive: C.0.0.0: amoxapine (25), asenapine (87), batelapine (64), clotiapine (16), clozapine (22), esmirtazapine (93), flumezapine (47), fluperlapine (46), loxapine (22), metiapine (22), mirtazapine (61), olanzapine (67), pentiapine (56), perlapine (23), quetiapine (74), rilapine (52), serazapine (63), tenilapine (52), zicronapine (100)

-cilpine antiepileptic: A.3.1.0: dizocilpine (60)

-oxepin beloxepin (75), cidoxepin (17), doxepin (15), maroxepin (54), metohepin (33), pinoxepin (18), savoxepin (56), spiroxepin (32)

-oxopine traboxopine (58)

-sopine adosopine (63)

-tepine citatetpine (54), clorotepine (29), damotepine (27), metitepine (27), tropatepine (28)

(b) atromepine (15), noscapine (7), prozapine (14)

(c) clobenzepam (25), homopipramol (20), opipramol (15)

-piprant prostaglandin receptors antagonists, non-prostanoids
(USAN: prostaglandin receptors antagonists, non prostinoid structure)

K.0.0.0 asapiprant (109), fevipiprant (109), laropiprant (97), setipiprant (104), vidupiprant (104)

-piprazole see -prazole

-pirone see -spirone

-pirox see -ox/-alox

-pitant see -tant

-plact platelet factor 4 analogues and derivatives

iroplact (74)

-pladib phospholipase A2 inhibitors

W.0.0.0 darapladib (94), ecopladib (90), efipladib (92), giripladib (96), goxalapladib (94), rilapladib (94), varespladib (87)
**-planin**  
S.5.0.0  
USAN: glycopeptide antibacterials (*Actinoplanes* strains)  
actaplanin (34), mideplanin (66), ramoplanin (57), teicoplanin (48)

**-plase**  
see -teplase, -uplase under -ase

**-plasmid**  
see -gene for gene therapy products (See also Annex4)

**-platin (x)**  
antineoplastic agents, platinum derivatives  
L.0.0.0  
USAN: antineoplastics (platinum derivatives)  
(a) carboplatin (48), cisplatin (39), dexamaplatin (64), enloplatin (64), eptaplatin (83), iroplatin (51), lobaplatin (65), miboplatin (66), miriplatin (85), nedaplatin (67), ormaplatin (63), oxalaplatin (56), picoplatin (87), satraplatin (80), sebriplatin (68), spiroplatin (48), triplatin tetranitrate (87), zeniplatin (63)

**-plermin**  
see -ermin

**-plestim**  
see -stim and -kin

**-plon**  
imidazopyrimidine or pyrazolopyrimidine derivatives, used as anxiolytics, sedatives, hypnotics  
A.2.2.0  
C.1.0.0  
USAN: non-benzodiazepine anxiolytics, sedatives, hypnotics  
adipiplon (98), divaplon (61), fasiplon (61), indiplon (86), lorediplon (105), ocinaplon (72), panadiplon (65), taniplon (61), zaleplon (72)

**-poetin (x)**  
erythropoietin type blood factors  
I.3.0.0  
USAN: erythropoietins  
(a) darbepoetin alfa (85), epoetin alfa (62), epoetin beta (62), epoetin delta (85), epoetin gamma (67), epoetin epsilon (72), epoetin kappa (97), epoetin omega (73), epoetin theta (95), epoetin zeta (92)
<table>
<thead>
<tr>
<th>-porfin</th>
<th>benzoporphyrin derivatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>exeporfinium chloride (105), lemuteporfin (91), padeliporfin (96), padoporfin (93), rostaporfin (83), stannsoporfin (79), talaporfin (84), temoporfin (70), verteporfin (71)</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>-poride</th>
<th>Na(^+)/H(^+) antiport inhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.3.0.0</td>
<td>amiloride (18), cariporide (74), eniporide (79), rimeporide (92), sabiporide (84), zoniporide (85)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>-pramine</th>
<th>substances of the imipramine group</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.3.2.0</td>
<td>(USAN: antidepressants (imipramine type))</td>
</tr>
</tbody>
</table>

(a) saturated dibenzazepine: azipramine (36), carpipramine (16), cianopramine (47), ciclopramine (29), clozapamidine (28), clomipramine (17), deprimine (31), desipramine (13), imipramine (8), ketimipramine (17), lofepramine (24), lopipramol (24) (replaced by lofepramine (34)), metapramine (34), mosapramine (64), quinupramine (32), tampramine (54), tienopramine (38), trimipramine (13), imipraminoxide (36)

(c) unsaturated dibenzazepine: carbamazepine (15), homopipramol (20), opipramol (15)

<table>
<thead>
<tr>
<th>-prazole</th>
<th>antiulcer, benzimidazole derivatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.0.0.0</td>
<td>(USAN: antiulcer agents (benzimidazole derivatives))</td>
</tr>
</tbody>
</table>

(a) cinprazole (34), dexlansoprazole (93), disuprazole (56), esaprazole (45), esomeprazole (79), fuprazole (39), ilaprazole (86), lansoprazole (60), leminoprazole (68), levulansoprazole (93), nepaprazole (74), nilprazole (37), omeprazole (46), pantoprazole (62), picoprazole (46), pumaprazole (76), rabeprazole (69), saviprazole (62), tenatoprazole (80), timoprazole (35), ufiprazole (58)
**-piprazole** psychotropics, phenylpiperazine derivatives (*Future use is discouraged due to conflict with the stem –prazole*)

C.0.0.0

(a) aripiprazole (75), brexpiprazole (107), dapiprazole (45), elopiprazole (70), enpiprazole (24), lorpiprazole (60), mepiprazole (24), sonepiprazole (80), tolpiprazole (25)

**pred** prednisone and prednisolone derivatives

Q.3.3.0 (USAN: pred-; -pred- or -pred: prednisone and prednisolone derivatives)

(a) chloroprednisone (12), cloprednol (31), difluprednate (21), domoprednate (47), etiprednol dicloacetate (88), fluprednidene (19), fluprednisolone (13), halopredone (36), isoflupredone (36), isoprednidene (24), loteprednol (64), mazipredone (32), meprednisone (15), methylprednisolone (8), methylprednisolone aceponate (52), methylprednisolone sulceptanate (56), oxisopred (29), prednazate (16), prednaxoline (22), prednicarbate (44), prednimustine (31), prednisolamate (13), prednisolone (6), prednisolone steaglate (16), prednisone (6), prenylidene (13), tipredane (54)

(b) various non-steroidal compounds
citiolone (23) (hepatobil. troubles), clorexolone (15) (diuretic), fenozolone (14) (psychotonic), tioxolone (16) (keratolytic), vistatolon (25) (antiviral)

(c) **-betasol**: clobetasol (26), doxibetasol (26), ulobetasol (54)

(c) **-methasone or -metasone**: aclometasone (41), amelometasone (74), beclometasone (17), betamethasone (11), betamethasone acibutate (26), cornetasone (29), desoximetasone (20), dexamethasone (8), dexamethasone acefurate (57), dexamethasone cipicilate (94), flumetasone (13), halometasone (41), icometasone enbutate (70), mometasone (56), paramethasone (12)

(c) **-olone**: steroids not used as glucocorticosteroids
(USAN: steroids (not prednisolone derivatives))
bardoxolone (101), clocontolone (16), descinolone (17), diflucortolone (18), fluclorolone acetonide (22), fluconolone acetonide (11), fluocortolone (15), fluorometholone (8), fluperolone (13), halocortolone (31), rimexolone (38), triacimolone (8), triacimolone benetonide (36), triacimolone furetonide (36), triacimolone hexacetonide (15)
INN – The use of stems

(c) clobetasone (26), cloticasone (52), deprodone (20), dichlorisone (10), diflorasone (30), flunisolide (11), fluticasone (52), fluticasone furoate (96), meclorisone (40), timobesone (51)

-olone

A.1.2.0 general anesthetics, pregnanes: alfadolone (27), alfaxalone (27), eltanolone (65), ganaxolone (76), minaxolone (39), renanolone (8), sepranolone (107)

H.2.0.0 antiarrhythmic: amafolone (40), edifolone (56)

H.4.0.0 antihyperlipidaemic: colestolone (59)

J.0.0.0 glycyrrhetic acid derivatives: carbenoxolone (15), cicloxolone (33), cinoxolone (33), deloxolone (51), enoxolone (15), roxolonium metilsulfate (33)

L.6.0.0 cytostatics - sex hormones: drostanolone (13), trestolone (25)

Q.2.3.0 androgens: androstanolone (4), drostanolone (13), mestanolone (10), metenolone (12), nandrolone (22), norethandrolone (6), oxandrolone (12), oxymetholone (11)

Q.2.3.1 oxendolone (42), mesterolone (15), rosterolone (59)

M.4.1.0 bolone (see bol, anabolic steroids): formebolone (31), mesabolone (29), metribolone (17), oxabolone cipionate (14), quinbolone (14), roxbolone (40), stenbolone (17), tibolone (22), trenbolone (24)

-prenaline see –terol

-pressin vasoconstrictors, vasopressin derivatives

Q.1.2.0

\[ \text{H-Cys-Tyr-Phe-Gln-Asn-Cys-Pro-Arg-Gly-NH}_2 \]

(a) argipressin (13), desmopressin (33), felypressin (13), lypressin (13), ornipressin (22), selepressin (105), terlipressin (46), vasopressin injection (16)

-previr see vir
-pride  sulpiride derivatives

C.0.0.0
J.1.0.0

(a)  C.0.0.0: alizapride (43), alpiropride (49), amisulpride (44), batanopride (61), broclepride (43), cisapride (49), dazopride (50), denipride (58), etacepride (52), eticlopride (52), flubepride (35), nemonapride (63) (previously emonapride (61)), peralopride (43), prosulpiride (43), prucalopride (78), sulmepride (43), sultopride (26), sulverapride (44), veralipride (43)

J.1.0.0: alepride (40), bromopride (27), cinitapride (41), cipropride (41), clebopride (32), dobutpride (57), iloraprilde (55), isosulpride (36), itopride (66), lintopride (65), lirexapride (74), lorapride (44), mezacopride (56), mosaprside (66), naronapride (104), pancopride (62), raclopide (52), remoxipride (49), renzapride (60), revexepride (108), tiapride (28), ticalopride (83), tinsulpride (44), trazolopride (51), tropapride (48), zacopride (55)

K.0.0.0: cloxacepride (42)

U.1.1.0/C.0.0.0: iolopride (123I) (73)

(b)  glimepride (66)

(c)  C.0.0.0: levosulpiride (63), sulpiride (18)

J.1.0.0: metoclopramide (17)

-pril (x)  angiotensin-converting enzyme inhibitors

H.3.0.0  (BAN: inhibitors of angiotensin-converting enzyme)
(USAN: antihypertensive (ACE inhibitors))

(a)  alacepril (50), benazepril (58), captopril (39), ceronapril (64), cilazapril (53), delapril (54), enalapril (46), fosinopril (56), idrapril (66), imidapril (60), indolapril (50), libenzapril (58), lisinopril (50), moexipril (60), moveltipril (56), orbutoapril (57), pentopril (53), perindopril (53), pivopril (52), quinapril (54), ramipril (52), rentiapril (55), spirapril (56), temocapril (64), trandolapril (53), utibapril (63), zabicipril (58), zofenopril (51)

-prilat (x)  (USAN: antihypertensives (ACE inhibitors) (diacid analogs of the -pril entity))

(a)  benazeprilat (58), cilazaprilat (54), enalaprilat (50), fosinoprilat (62), imidaprilat (71), moexiprilat (67), perindoprilat (56), quinaprilat (60), ramiprilat (53), spiraprilat (60), temocaprilat (78), trandolaprilat (60), utibaprilat (65), zabiciprilat (64), zofenoprilat (63)
-prim antibacterials, dihydrofolate reductase (DHFR) inhibitors, trimethoprim derivatives
(USAN: antibacterials (trimethoprim type))

S.5.5.0

(a) aditoprim (49), baquiloprim (56), brodimoprim (44), epiroprim (44), iclaprim (88), metioprim (42), ormetoprim (21), talmetoprim (41), tetroxoprim (33), trimethoprim (11), vaneprim (48)
(c) diaveridine (18)

-pris- steroidal compounds acting on progesterone receptors (excluding -gest- compounds)

Q.2.0.0 (USAN: -prisnil: selective progesterone receptor modulators (SPRM); -pristine: progesterone receptor antagonists)

(a) aglepristone (70), asoprisnil (88), asoprisnil ecamate (89), lilopristone (54), lonaprisan (97), mifepristone (54), onapristone (58), telapristone (103), toripristone (61), ulipristal (107), vilaprisan (109)
(c) epristeride (69), saprisartan (72), and the stem -pristin selected for antibacterials, streptogramins, protein-synthesis inhibitors, pristinamycin derivatives

-pristin antibacterials, streptogramins, protein-synthesis inhibitors, pristinamycin derivatives

S.6.0.0 (USAN: antibacterials, pristinamycin derivatives)

(a) dalfopristin (67), efepristin (75), flopristin (98), quinupristin (65), linopristin (98), volpristin (80)
### -profen (x)  anti-inflammatory agents, ibuprofen derivatives

**A.4.2.0** (USAN: anti-inflammatory/analgesic agents (ibuprofen type))

![Chemical structure of ibuprofen]

(a) alminoprofen (40), araprofen (65), atliprofen (74), bakeprofen (61), benoxaprofen (34), bermoprofen (57), bifeprofen (57), carprofen (35), cicloprofen (32), cliprofen (32), dexibuprofen (61), dextraprofen (70), esflurbiprofen (56), fenoprofen (26), flunoxaprofen (44), flurbiprofen (18), flurbiprofen (28), frabuprofen (61), furciprofen (44), hexaprofen (30), ibuprofen (16), indoprofen (32), isoprofen (40), ketoprofen (28), lobuprofen (53), lonaprofen (61), losmiprofen (61), loxoprofen (50), mabuprofen (64), mexoprofen (33), miroprofen (44), odalprofen (66), pelubiprofen (76), piketoprofen (40), pirprofen (32), pranoprofen (72), ximoprofen (37), zaltoprofen (64), zoliprofen (55)

(b) aprofene (12) (antispasm. coron. vasodil.), diprofene (12) (antispasm. blood vessels)

(c) brofezil (31), protizinic acid (27), tiaprofenic acid (30)

### prost (x)  prostaglandins

**Q.0.0.0** (USAN: -prost- or -prost: prostaglandins)

(a) alfaprostol (45), alprostadil (39), ataprost (62), beraprost (106), bimatoprost (85), butaprost (55), carboprost (36), cicaprost (54), ciprostene (51), clinprost (68), cloprostenol (33), cobiprost (98), delprofen (42), dimoxaprost (52), dinoprost (26), dinoprostone (26), doxaprost (34), ecraprost (83), eganoprost (84), enisoprost (50), epoprostenol (44), eptaloprost (56), etaprostenol (46), fenprofene (42), flunoprost (53), fluprostene (33), froxiprost (55), gemeprost (42), iloprost (48) (originally ciloprost (46)), laniprost (72), latanoprost (67), latanoprostene bunod (107), limaprost (56), lubiprostone (89), luprostil (44), meteneprost (45), misoprostol (47), naxaprostene (58), nileprost (45), nobiprostolan (109), nocloprost (51), oxiprostol (44), penprofene (37), pimilprost (71), pirprofen (51), posaraprostan (97), prostalene (34), remiprostil (65), rivenprost (93), rocaprost (48), sulprostone (37), taprostene (58), tiaprosten (41), tafluprost (89), tilsuprost (51), tiprostanol (48), travoprost (80), treprostinil (87), unoprostone (66), vapirost (58), viprostil (53)

### -prostil  prostaglandins, anti-ulcer

(a) arbabeprost (35), deprostil (32), enprostil (50), mexiprostil (52), orniprostil (56), rioprostil (49), spiriprostil (63), trimoprostil (49)

### -quidar  drugs used in multidrug resistance; quinoline derivatives

**L.0.0.0** (USAN: multidrug resistance inhibitors (quinoline derivatives))

dofequidar (88), laniquidar (85), tariquidar (86), zosuquidar (86)
INN – The use of stems

-quine (d) quinoline derivatives

\[
\begin{array}{c}
\text{N} \\
\text{O}
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\]

(a) antimalarial: amodiaquine (1), amopyroquine (8), bulaquine (82), chloroquine (4), ferroquine (95), hydroxychloroquine (8), mefloquine (33), mexitrapequine (26), pamaquine (4), pentaquine (4), primaquine (1), quinocide (34), tafenoquine (80), tebuquine (49)

acequinoline (22), actinoquinol (15), aminoquinol (22), amquinate (21), amiquinsin (17), aminoquinuride (45), benzoxiquine (18), broquinaoldol (17), buquinera (40), buquinolate (16), clamoxyquine (16), cletoquine (20), chlorguinaldol (1), cinoquidal (40), ciproquinate (22), cloquinol (16), cloquinate (11), cloxiquine (30), debrisoquine (15), decoquinate (20), diiodohydroxyquinoline (1), esproquinate (31), flumequine (34), guanisquinol (15), hedaquinium chloride (8), intiquinatine (99), iquindamine (34), isotiiquimide (49), leniquinsin (18), mebiquine (29), nequinate (22), nifuroquinol (36), olaquinolox (31), oxamniquine (28), peraquinsin (29), pirquinzo (43), proquinolate (17), quinaldine blue (17), quinacarbonate (31), quindeosamine (15), quindoxin (26), quinetalate (16), quinfamid (40), quinisoamide (4), quinpresenaline (17), quinuclidinol bromide (40), quipazine (17), sitamaquine (80), tilbroquinol (45), tiliquinol (45), tiquinamide (35), tiquizium bromide (47), toquipine (17), tretoquinol (21), viquidil (25)

(c) broxaldine (12), cinchocaine (1), cinchophen (1), climiqualine (33), dehydroemetine (15), dequalinium chloride (8), dimethyltubocurarinium chloride (1), dimoxyline (1), drotaverine (17), ethaverine (4), eucractic (22), famotide (23), flucarbril (14), glafenine (15), laudexium metilsulfate (4), laurolininium acetate (12), memotine (22), metofoline (12), nelomiphene (1), niceverine (15), nitroxoline (15), noscapine (7), octaverine (18), oxolinic acid (15), oxycinchophen (6), pyrvinium chloride (6), trethinium tosilate (14), tritoqualine (14), tubocurarine chloride (1)

-quinil see -azenil

-racetam amide type nootrope agents, piracetam derivatives

B.1.0.0 (BAN: substances of the piracetam group)

(USAN: nootropics (learning, cognitive enhancers) piracetam type)

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\]

(a) aloracetam (62), aniracetam (44), brivaracetam (93), cebaracetam (66), coluracetam (86), dimiracetam (68), doliracetam (53), dupracetam (38), etiracetam (40), fasoracetam (79), fonturacetam (104), imuracetam (42), levetiracetam (62), molracetam (55), nebracetam (62), nefiracetam (64), nicoracetam (63), oxiracetam (43), piracetam (22), pramiracetam (46), rolziracetam (54), seletracetam (93)

related: tenilsetam (51)
-racil  uracil type antineoplastics

-AC-0.0.0

(a) eniluracil (77), fluorouracil (13), gimeracil (80), oteracil (80)

-thiouracil  uracil derivatives used as thyroid antagonists

M.7.3.0  (USAN: -uracil: uracil derivatives used as thyroid antagonists and as antineoplastics)

(a) iodothiouracil (01), methylthiouracil (01), propylthiouracil (01)

-relin (x)  pituitary hormone-release stimulating peptides

Q.0.0.0  (BAN: hypophyseal hormone release-stimulating peptides)

(a) LHRH-release-stimulating peptides: avorelin (74), buserelin (36), deslorelin (61),
gonadorelin (32), goserelin (55), histrelin (53), leuprolelin (47), lutrelin (51), nafarelin (50),
peforelin (93), triptorelin (56), zoptarelin doxorubicin (107)

-morelin  growth hormone release-stimulating peptides

(a) anamorelin (97), capromorelin (83), dumeorelin (59), examorelin (72), ipamorelin (78),
lenomorelin (106), macimorelin (100), pralmorelin (77), rismorelin (74), sermorelin (56),
tabimorelin (80), tesamorelin (96), ulimorelin (103)

(c) somatorelin (57)

-tirelin  thyrotropin releasing hormone analogues

(a) azetirelin (60), fertirelin (42), montirelin (58), orotirelin (58), posatirelin (60), protirelin
(31), rovatirelin (107), taltirelin (75)

other: corticorelin (64) (diagnostic agent)

(c) thyrotropin alfa (78) (thyrotropin releasing hormone (TRH) analog)

-relix  gonadotropin-releasing-hormone (GnRH) inhibitors, peptides

Q.0.0.0  (USAN: -relix: hormone-release inhibiting peptides)

(a) abarelix (78), cetrorelix (66), degarelix (86), detirelix (56), ganirelix (65), iturelix (79),
ozarelix (94), prazarelix (81), ramorelix (69), teverelix (78)
INN – The use of stems

-**renone**  aldosterone antagonists, spironolactone derivates

N.1.8.0  (USAN: aldosterone antagonists (spironolactone type))

![Chemical structure](image)

(a)  canrenoic acid (20) and potassium canrenoate (20), canrenone (20), dicirenone (50),
drospirenone (63), finerenone (108), eplerenone (77), mespirenone (51), spironorenone (45)

(b)  bromchlorenone (12) (antifungal), menatetrenone (28) (antihemorrhagic), teprenone (50),
ubidecarenone (48) (in congestive heart failure)

(c)  oxprenoate potassium (53), prorenoate potassium (32), spironolactone (11), spiroxasone
(14)

-**restat**  see -stat

-**retin**  retinol derivatives

P.1.0.0  (USAN: -retin- or -retin: retinol derivatives)

![Chemical structure](image)

(a)  acitretin (56) (previously etretin (51)), alitretinoin (80), doretinel (60), etretinate (41),
fenretinide (51), isotretinoin (41), motretinide (38), pelretin (60), peretinoin (98), retinol
(18), tretinoin (25), tretinoin tocoferil (66)

(b)  noretynodrel (13), secretin (1), trethinium tosilate (14)

-**ribine**  ribofuranyl-derivatives of the "pyrazofurin" type

L.0.0.0/
S.5.3.0

![Chemical structure](image)

(a)  azaribine (19), cladribine (68), isatoribine (83), loxoribine (64), mizoribine (46), triciribine
(46)
(c) pirazofurin (31), ribavirin (31), riboprine (20), tiazofurine (48)
related: benaxibine (50)

**rifa-** antibiotics, rifamycin derivatives

S.6.4.0

![Chemical structure of rifamycin]

(a) rifabutin (52), rifalazil (78), rifametane (61), rifamexil (67), rifamide (15), rifampicin (17),
rifamycin (13), rifapentin (43), rifaximin (49) (previously rifaxidine (48))

**-rinone** cardiac stimulants, amrinone derivatives

H.1.0.0 (USAN: cardiotonics (amrinone type))

![Chemical structure of amrinone]

(a) amrinone (38), bemarinone (57), medorinone (54), milrinone (50), nanterinone (60),
olprinone (70), pelrinone (53), saterinone (56), toborinone (72), vesnarinone (57)
(b) gestrinone (39), indacrinone (51), taziprinone (48)

**-rixin** chemokine CXCR receptors antagonists

S.7.0.0 (USAN: Chemokine (C-X-C motif) receptor 2 (CXCR2) modulators)
dazirixin (107), elubrixin (107), ladarixin (105), navarixin (105), reparixin (91)

**-rizine** see -izine

**-rolimus** see -imus
-rozole  aromatase inhibitors, imidazole-triazole derivatives

L.0.0.0

\[
\begin{align*}
R_1 & \quad R' \\
N & \quad N
\end{align*}
\]

anastrozole (72), fadrozole (64), finrozole (81), letrozole (70), liarozole (64), talarozole (99), vorozole (64)

(b)  aminitrozole (4), sulfatrozole (24), tenonitrozole (47)

-rsen  antisense oligonucleotides

aganirsen (101), alicaforsen (85), anivamersen (105), aprinocarsen (89), beclanorsen (01), cenersen (97), custirsen (99), drisapersen (106), gataparsen (103), eteplirsen (103), mopomersen (99), oblimersen (87), trabedersen (97)

-virsen (antivirals):  afovirsen (71), fomivirsen (75), miravirsen (101), radavirsen (106), trecovirsen (77)

-rubicin  antineoplastics, daunorubicin derivatives

L.5.0.0  (USAN: antineoplastic antibiotics (daunorubicin type))

(a)  aclorubicin (44), aldoxorubicin (108), amrubcin (65), berubicin (98), carubicin (40), daunorubicin (20), detorubicin (41), doxorubicin (25), epirubicin (48) (originally piodorubicin (47)), esorubicin (47), galarubicin (80), idarubicin (47), ladirubicin (83), leurubicin (64), medorubicin (47), nemorubicin (71), pirarubicin (55), rodorubicin (54), sabarubicin (90), valrubcin (79), zorubicin (39), zoptarelin doxorubicin (107)

-sal  salicylic acid derivatives

(USAN: -sal-; -sal; or sal-: anti-inflammatory agents (salicylic acid derivatives))
(a) sal- analgesic anti-inflammatory A.4.2.0
choline salicylate (15), imidazole salicylate (51), salacetamide (1), salcolex (23), saletamide (20), salfluverine (29), salicylamide (1), salnacedin (73), salprotoxide (31), salsalate (28), salverine (15)

various
salafibrate (41) (antihyperlipidaemic), salantel (29) (anthelmintic), salcaproxic acid (88) (absorption promotor), salclobuzic acid (92) (pharmaceutical aid), salinizid (8) (antituberculosis agent), salirasib (97) (antineoplastic)

-sal analgesic anti-inflammatory A.4.2.0
detanosal (23), diflunisal (33), fendosal (35), flufenisal (22), fosfosal (37), guacetisal (40), guameosal (50), parcetasal (65), pranosal (24), sulprosal (36), tenosal (63)

antithrombotic
flufosal (42)

various: antituberc.
fenamisal (15), thiomersal (1) (disinfect.), triflusal (37) (antithrombotic)

-sal analgesic anti-inflammatory A.4.2.0
acetaminosalol (1), carbasalate calcium (27), carsalam (13), etersalate (50), etosalamide (14), isalmadol (92), parsalmide (32), talosalate (43)

various
amotosalen (85), calcium benzamidosalicylate (10), homosalate (28) (sunscreen agent), isalsteine (63) (mucolytic), lasalocid (30) (antibiotic (veterinary)), mersalyl (4) (mercurial diuretic), octisalate (83) (sunscreen), osalmid (15) (choleretic), susalimod (73) (immunomodulator), xenysalate (12) (antiseborrhic)

salazo- phenylazonosalicylic acid derivatives antibacterial S.5.1.0
salazodine (22), salazosulfadimidine (11), salazosulfamide (1), salazosulfathiazole (1)

-salazine/-salazide
dersalazine (86), mesalazine (52), olsalazine (52), sulfasalazine (55), balsalazine (48), ipsalazide (48)

-salan brominated salicylamide derivatives disinfectant S.2.1.0
bensalan (18), dibromsalan (14), flusalan (16), fursalan (18), metabromsalan (16), tiosalan (18), tribromsalan (14)

(b) non-salicylic acid derivatives
fosalvudine tidoxil (95), macrosalb (99mTc) (33), rusalatide (96), trioxysalen (16) (pigmenting agent)

bronchodilators
levosalbutamol (78), salbutamol (20), salmefamol (23)
analgesic, anti-inflammatory A.4.2.0
aloxiprin (13), anilamate (13), benorilate (21), cresotamide (29), dipyrocetyl (6), ethenzamide (10), fenamifuril (16), gentisic acid (01), hydroxytoluic acid (17), sodium gentisate (1), sodium glucaspaldrate (17)

various
4-aminosalicylates of the -caine series D.1.0.0: ambucaine (6), hydroxyprocaine (1), hydroxytetracaine (1), propoxycaine (4)

antihypertensives H.3.0.0: labetalol (35)

antitussives K.1.0.0: alloclamide (l6), flualamide (20)

saluretics N.1.2.0: xipamide (22) (sulfamoyl derivative),

mercurial diuretics N.1.3.0: mercuderamide (1)

anthelmintics S.3.1.0: bromoxanide (31), clioxanide (19), niclosamide (13), rafoxanide (24), closantel (36), flurantel (25), resorantel (23)

antifungals S.4.0.0: buclosamide (16), exalamide (37), pentalamide (13)

See also Pharm S/Nom 557

-sartan (x) angiotensin II receptor antagonists, antihypertensive (non-peptidic)
H.3.0.0 (USAN: -sartan: angiotensin II receptor antagonists)
avibesartan (73), azilsartan (95), azilsartan medoxomil (97), candesartan (71), elisartan (72), embusartan (78), eprosartan (71), fimasartan (94), forasartan (74), irbesartan (71), losartan (66), milfiasartan (76), olmesartan (93), olmesartan medoxomil (86), pomisartan (73), pratosartan (85), ripisartan (73), saprisartan (72), tasosartan (72), telmisartan (70), valsartan (68), zolasartan (70)

-semide diuretics, furosemide derivatives
N.1.1.0

(a) azosemide (35), furosemide (14), galosemide (33), sulosemide (49), torasemide (35)

-sermin see -ermin
-serod  serotonin receptor antagonists and partial agonists

J.0.0.0

(a)  capeserod (94), piboserod (79), sulamserod (82), tegaserod (79)

-serpine (d)  derivatives of *Rauwolfia* alkaloids

E.5.4.0

(a)  bietaserpine (14), mefeserpine (15), reserpine (4)

(c)  chloroseridine (11), deserpidine (6), methoserpidine (11), metoserpate (20), rescinetol (44), rescinnamine (6), syrosingopine (10)

-sertib  serine/threonine kinase inhibitors

L.0.0.0

afuresertib (108), alisertib (104), barasertib (102), cenisertib (104), danusertib (99), delcasertib (105), galunisertib (109), ilorastib (108), ipatasertib (108), pimasertib (105), rabusertib (107), rigosertib (106), silmitasertib (103), tanzisertib (106), tozasertib (100), volasertib (102)

-setron  serotonin receptor antagonists (5-HT3) not fitting into other established groups of serotonin receptor antagonists

C.7.0.0

(BAN: serotonin receptor antagonists (5HT3) used as antihypertensives)
(USAN: serotonin 5-HT3 receptors antagonists)

(a)  alosetron (66), azasetron (68), bemesetron (64), cilansetron (68), dolasetron (65), fabesetron (74), galdansetron (72), granisetron (59), indisetron (76), itasetron (68), lerisetron (69), lurosetron (69), mirisetron (72), ondansetron (59), palonosetron (74), ramosetron (70), ricasetron (70), tropisetron (62), zatosetron (64)

som-  growth hormone derivatives

Q.0.0.0

(USAN: growth hormone derivatives)
(USAN: som- -bove: bovine somatotropin derivatives)
(USAN: som- -por: porcine somatotropin derivatives)

(a)  -bove: bovine type substances: somagrebove (63), somavubove (63), sometribove (74), somidobove (58)
-por: porcine-type substances: somalapor (62), somenopor (62), somfasepor (66), sometripor (55)
-salm: salmon-type substances: somatosalm (69)
Others: somatrem (54), somatropin (56), somatropin pegol (103)

(b) somatorelin (57), somantadine (51), somatostatin (46)

-sopine see -pine

-spirone anxiolytics, buspirone derivatives

C.1.0.0

(a) alnespirone (70), binospirone (65), buspirone (30), enilospirone (52), perospirone (71), revospirone (61), tandospirone (60), tiospirone (57), umespirone (60), zalospirone (64)
(c) eptapirone (82), gepirone (54), ipsapirone (54)

-stat- or enzyme inhibitors
-stat

-castat dopamine β-hydroxylase inhibitors
(a) etamicastat (101), nepica stat (78), zamicastat (108)

-elestat elastase inhibitors
(a) alvelestat (104), depelestat (91), freselestat (89), sivelestat (78), tiprelestat (103)

-inostat histone deacetylase inhibitors
(a) abexinostat (105), belinostat (97), dacinostat (89), entinostat (99), givinostat (101), mocetinostat (101), panobinostat (96), pracinostat (104), quisinostat (107), resminostat (102), tefinostat (105), vorinostat (94)

-listat gastrointestinal lipase inhibitors
(a) cetilistat (91), orlistat (66)

-mastat matrix metalloproteinase inhibitors
(a) batimastat (70), cipemastat (81), ilomastat (73), marimastat (75), prinomastat (82), rebimastat (89), ricolinostat (109), solimastat (80), tanomastat (82)

-mostat proteolytic enzyme inhibitors:
(a) camostat (46), nafamostat (53), patamostat (69), sepimostat (68), upamostat (105)
INN – The use of stems

(c) aloxistatin (57), ulinastatin (56)

-restat or -restate-

M.5.0.0

alrestatin (37), epalrestat (55),fidarestat (78), imirestat (59),lidorestat (87),minalrestat (76),ponalrestat (58),ranirestat (91),risarestat (82),tolrestat (51),zenarestat (64),zopolrestat (64)

various: afegostat (101) β-glucocerebrosidase inhibitor

apratastat (93): inhibition of TNF-α converting enzyme

avagacestat (104): gamma secretase inhibitor

azalanstat (73): lanosterol 14α-demethylase inhibitor

begacestat (97) gamma secretase inhibitor

benurestat (31): urease inhibitor

cilastatin (50): renal dehydropeptidase inhibitor

cindinustat (107): nitric oxide synthase inhibitor

conestat alfa (98) human plasma protease C1 inhibitor

duvoglustat (102) Pompe's disease therapy

eliglustat (103) glucosylceramide synthase inhibitor

emixustat (108): retinol isomerase inhibitor

ezatiostat (98) glutathione-S-transferase inhibitor

febuxostat (85): xanthine oxidase and xanthine dehydrogenase inhibitor

imetelstat (101) antineoplastic, telomerase inhibitor

iofolastat (123I) (105) radiopharmaceutical

iroxustat (104) antineoplastic

lapaquistat (96) squalene synthase inhibitor

lucerastat (106): ceramide glucosyltransferase inhibitor

migalastat (95): alpha-galactosidase A enzyme inhibitor

miglustat (85): glucosyltransferase inhibitor

niraxostat (99): xanthine oxidase inhibitor

molidustat (108): HIF (hypoxia induced factor)-prolyl hydroxylases inhibitor

pentostatin (38): vidarabin activity potentiator; inhibitor of enzymatic deaminative metabolism

pepstatin (28): pepsin inhibitor

pevonedistat (109): antineoplastic

pradigastat (106): acyl CoA:diacylglycerol acyltransferase inhibitor

roxadustat (108): HIF (hypoxia induced factor)-prolyl hydroxylases inhibitor

selisistat (106): inhibitor of sirtuin enzymes

semgacestat (99) gamma secretase inhibitor

somatostatin (43): growth hormone release inhibiting factor

talabostat (92): antineoplastic

technetium (99mTc) trofolastat chloride (109): radiolabelled diagnostic agent

telotristat (104) tryptophan hydroxylase inhibitor
	
tendamistat (44): amylase inhibitor
topiroxostat (102): xanthine oxidase and xanthine dehydrogenase inhibitor
tosedostat (99): antineoplastic, aminopeptidase inhibitor
vistatolon (25): antiviral antibiotic
zinostatin (40): antineoplastic
zinostatin stimalamer (74)

(b) nystatin (6)

- **vastatin** antihyperlipidaemic substances, HMG CoA reductase inhibitors

H.4.0.0 (USAN: -statin: antihyperlipidaemic substances, HMG CoA reductase inhibitors)

(a) atorvastatin (71), bervastatin (72), cerivastatin (74), cilovastatin (63), dalvastatin (64),
fluvastatin (62), glenvastatin (70), lovastatin (57), mevastatin (44), pitavastatin (86)
(replaces itavastatin (80)), pravastatin (57), rosuvastatin (94), simvastatin (58), tenivastatin
(85)

---

- **steine** mucolytics, other than bromhexine derivatives

K.0.0.0 (BAN: substances of the acetylcysteine group)

(a) acetylcysteine (13), bencisteine (30), carbocisteine (34), cartasteine (72), dacisteine (49),
danostaine (53), erdosteine (56), fudosteine (77), guaisteine (57), isalisteine (63), letosteine
(38), mecysteine (13), midesteine (63), moguisteine (61), nesosteine (52), omonasteine
(40), prenisteine (42), salmisteine (58), taurosteine (63), telmesteine (63)

---

- **ster-** androgens/anabolic steroids

Q.2.3.1

(a) **testosterone:** cloxotestosterone (12), methyltestosterone (4), testosterone (4), testosterone
ketolaurate (16)

**sterone:** bolasterone (13), fluoxymesterone (6), oxymesterone (12), prasterone (23),
tiometesterone (14)

**ster:** mesterolone (15), penmesterol (14), rosterolone (59)

(b) progestational steroids

**gesterone:** dydrogesterone (12), haloprogesterone (11), hydroxyprogesterone (8),
medroxyprogesterone (10), norgestercine (14), progesterone (4), segesterone (89)

**sterone:** dimethisterone (8), ethisterone (4), norethisterone (6), norvinisterone (10)

**various:** **sterone:** aldosterone (6) (corticosteroid), calusterone (23) (antineoplastic)
**-sterol**: azacosterol (16) (hypcholesterolemic), dihydrotachysterol (1) (antihypoparathyroid), iodocholesterol (131I) (39)

**ster**: nisterime (38) (contraceptive agent), stercuronium iodide (21) (neuromuscular blocking agent)

**-steride**

<table>
<thead>
<tr>
<th>Testosterone Reductase Inhibitors</th>
<th>USAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>bexlosteride (81), dutasteride (78), epristeride (69), finasteride (62), izonsteride (81), lapisteride (85), turosteride (67)</td>
<td></td>
</tr>
</tbody>
</table>

**-stigmine (d)**

<table>
<thead>
<tr>
<th>Acetylcholinesterase Inhibitors</th>
<th>USAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: cholinesterase inhibitors (physostigmine type))</td>
<td></td>
</tr>
<tr>
<td>(a) distigmine bromide (16), eptastigmine (62), ganstigmine (81), neostigmine bromide (4), pyridostigmine bromide (6), quilostigmine (76), rivastigmine (77), terestigmine (77)</td>
<td></td>
</tr>
<tr>
<td>(c) eseridine (53)</td>
<td></td>
</tr>
</tbody>
</table>

**-stim**

<table>
<thead>
<tr>
<th>Colony Stimulating Factors</th>
<th>USAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: conjugates of two different types of colony-stimulating factors)</td>
<td></td>
</tr>
<tr>
<td>(a) ancestim (79) (cell growth factor), garnocestim (85) (immunomodulator), pegacaristim (80) (megakaryocyte growth factor), romiplostim (97) (platelet stimulating factor)</td>
<td></td>
</tr>
</tbody>
</table>

**-distim**

<table>
<thead>
<tr>
<th>Combination of Two Different Types of Colony Stimulating Factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: conjugates of two different types of colony-stimulating factors)</td>
</tr>
<tr>
<td>(a) leridistim (80), milodistim (74)</td>
</tr>
</tbody>
</table>

**-gramostim**

<table>
<thead>
<tr>
<th>Granulocyte Macrophage Colony Stimulating Factor (GM-CSF) Types Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) ecogramostim (62), molgramostim (64), regramostim (64), sargramostim (66)</td>
</tr>
</tbody>
</table>

**-grastim**

<table>
<thead>
<tr>
<th>Granulocyte Colony Stimulating Factor (G-CSF) Type Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) balugrastim (107), empegfilgrastim (107), filgrastim (64), lenograstim (64), lipefilgrastim (105), nartograstim (66), pegbovigrastim (109), pegfilgrastim (85), pegnartograstim (80), pegteograstim (109)</td>
</tr>
</tbody>
</table>

**-mostim**

<table>
<thead>
<tr>
<th>Macrophage Stimulating Factors (M-CSF) Type Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) cilmostim (71), lanimostim (91), mirimostim (65)</td>
</tr>
</tbody>
</table>

**-plestim**

<table>
<thead>
<tr>
<th>Interleukin-3 Analogues and Derivatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: interleukin-3 derivatives, pleiotropic colony-stimulating factors)</td>
</tr>
<tr>
<td>(a) daniplestim (76), muplestim (72)</td>
</tr>
</tbody>
</table>
**sulfa-** anti-infectives, sulfonamides

(BAN: sulpha-)
(USAN: antimicrobials (sulfonamides derivatives))

![Image of molecular structure](image)

(a) sulfabenz (17), sulfabenzamide (27), sulfacarbamide (12), sulfacecole (30), sulfacetamide (1), sulfachlorpyridazine (10), sulfachrysoidine (1), sulfacitine (23), sulf aclomide (17), sulf aclarazole (25), sulfaclozine (25), sulfadasulfone sodium (1), sulfadiazine (4), sulfadiazine sodium (4), sulfadicramide (4), sulfadimethoxine (10), sulfadimidine (1), sulfadoxine (20), sulfathidole (8), sulfafurazole (1), sulfaguainidine (4), sulfaguanoole (23), sulfalene (12), sulfaloxic acid (15), sulfamazone (40), sulfamerazine (4), sulfamerazine sodium (4), sulfamethizole (1), sulfamethoxazole (14), sulfamethoxypridazine (8), sulfamometimidine (12), sulfametoxydiazine (17), sulfametrole (31), sulfamonomethoxine (11), sulfamoxole (12), sulfanilamide (4), sulfanitran (15), sulfaperin (14), sulfaphenazole (10), sulfaproxylene (4), sulfapyrazole (18), sulfapyridine (1), sulfaquinoxaline (46), sulfasalazine (55), sulfasomizole (10), sulfasymazine (12), sulfathiazole (4), sulfathioare (1), sulfatolamide (10), sulfatroxazole (29), sulfatrozole (24)

(b) galsulfase (92), idursulfase (90), sulfarsphenamine (4)

(c) benzylsulfamide (1), glucosulfamide (1), maleylsulfathiazole (1), mesulfamide (41), nitrosulfathiazole (1), phthalysulfamethizole (6), phthalysulfathiazole (1), salazodine (22), salazosulfadimidine (11), salazosulfamide (1), salazosulfathiazole (1), stearyl sulfamide (1), succinylsulfathiazole (4), sulfisomidine (1), vanyldisulfamide (1), mafenede (1) (sulfonamide, but not sulfanilamide)

**-sulfan** antineoplastic, alkylating agents, methanesulfonates

(USAN)

![Image of molecular structure](image)

(a) busulfan (6), improsulfan (35), mannosulfan (24), pipoosulfan (15), ritrosulfan (33), treosulfan (26)

**-tacept** see -cept

**-tadekin** see -kin
**-tadine**  histamine-H\(_1\) receptor antagonists, tricyclic compounds

G.2.1.0 (USAN: -(a)tadine: tricyclic histaminic-H\(_1\) receptor antagonists, loratadine derivative (formerly -tadine))

(a) alcaftadine (94), azatadine (18), cyproheptadine (10), desloratadine (80), loratadine (54), napactadine (46), olopatadine (72), rupatadine (74), vapitadine (95)

(b) amantadine (15), carmantadine (31), rimantadine (17), somantadine (51), tromantadine (28) (see -mantadine)

**-tant**  neurokinin (tachykinin) receptor antagonists

-**pitant** neurokinin NK\(_1\) (substance P) receptor antagonist

(a) aprepitant (84), befetupitant (91), burapitant (101), casopitant (94), dapitant (74), ezlopitant (82), figopitant (82), fosaprepitant (94), laneptant (77), maropitant (90), netupitant (90), nolpitantium besilate (75), orvepitant (94), rolapitant (97), serlopitant (100), telmapitant (108), vestipitant (91), vofopitant (82)

-**dutant** neurokinin NK\(_2\) receptor antagonist

(a) ibodutant (98), nepadutant (78), saredutant (75)

-**nertant** neurotensin receptor antagonist

(a) meclinertant (88) (replaces reminertant (85))

-**netant** neurokinin NK\(_3\) receptor antagonist

(a) osanetant (74), talnetant (81)

**-tapide**  microsomal triglyceride transfer protein (MTP) inhibitors

H.4.0.0 dirlatapide (91), granotapide (104), impliclipide (82), mitratapide (90), lomitapide (101), usistapide (104)

**-taxel**  antineoplastics, taxane derivatives

L.0.0.0 cabazitaxel (98), docetaxel (71), larotaxel (94), milataxel (91), ortataxel (87), paclitaxel (68), paclitaxel ceribate (91), paclitaxel poliglumex (90), paclitaxel trevatide (109), simotaxel (94), tesetaxel (93)
-tecan antineoplastics, topoisomerase I inhibitors
L.0.0.0 (USAN: antineoplastics (camptothecin derivatives))

afeletecan (85), atiratecan (101), belotecan (91), cositecan (100), delimotecan (97),
diflomotecan (84), elemotecan (92), etirinotecan pegol (107), exatecan (81), exatecan alideximer (89),
firtecan peglumer (108), firtecan pegol (107), gimatecan (86), irinotecan (64), lurtotecan (74),
mureletecan (85), namitecan (100), pegamotecan (91), rubitecan (82),
tenifatotecan (102), topotecan (65)

-tepa antineoplastics, thiotepa derivatives
L.2.0.0

(a) azatepa (12), pumitepa (48), thiotepa (10)

tepine see -pine

teplase tissue type plasminogen activators, see -ase item VI

-termin see -ermin

-terol bronchodilators, phenethylamine derivatives

( previously -prenaline
   or -terenol unofficial)

E.4.0.0

(a) abediterol (104), amiterol (26), arformoterol (90), bitolterol (34), broxaterol (51),
carmoterol (91), cimaterol (54), colterol (36), difeterol (36), etanterol (53), fenoterol (26),
formoterol (44), imoxiterol (52), indacaterol (91), milveterol (97), naminterol (53),
nardeterol (62), olodaterol (106), picumeterol (64), procaterol (37), reproterol (30),
rimeterol (26), salmeterol (55), sulfonterol (31), vilanterol (103), zilpaterol (60), zinterol (38)
-buterol: bambuterol (49), carbuterol (29), clenbuterol (28), divabuterol (51), flerobuterol (59), ibuterol (31), mabuterol (46), nisbuterol (38), pirbuterol (30), tobuterol (45), tulobuterol (40)

cardiac stimulants: metaterol (43), prenalterol (38), xamoterol (48)

previously -prenaline or -terenol: clorprenaline (17), hexoprenaline (21), isoprenaline (1), levisoprenaline (10), metiprenaline (24), orciprenaline (14), quinprenaline (17), deterenol (25), soterenol (20)

(b) azacosterol (16), dihydrotachysterol (1), penmesterol (14)

(c) dioxethedrine (6), isoetarine (13), methoxyphenamine (1), pseudoephedrine (11), salbutamol (20), salmefamol (23), terbutaline (22)

-terone  antiandrogens

(Q.2.3.1)

(a) abiraterone (74), benorterone (15), cyproterone (16), delanterone (42), galeterone (105), inocoterone (54), osaterone (68), topterone (39), zanoterone (67)

(b) clometerone (15) (antiestrogen)

(c) cioteronel (62), orteronel (104), oxendolone (42), rosterolone (60),

-tiazem  calcium channel blockers, diltiazem derivatives

F.2.1.0

![Chemical structure](image)

cientiazem (61), diltiazem (30), iprotiazem (56), nictiazem (54), siratiazem (68)

-tibant  bradykinin receptors antagonists

(USAN: antiasthmatics (bradykinin antagonists))

H.0.0.0

anatibant (88), deltibant (75), fasitibant chloride (103), icatibant (67), safotibant (105)
-tide peptides and glycopeptides (for special groups of peptides see -actide, -pressin, -relin,-tocin)

analgesic: leconotide (86), ziconotide (78)

angiogenesis inhibitor: cilengitide (81)

angiotensin convers. inhibitor: teprotide (36)

anti-inflammatory: icrocaptide (89)

antianaemic: peginesatide (108)

antiarrhythmic: danegaptide (101), rotigaptide (94)

antidepressant: nemifitide (87)

antidiabetic: amlintide (76), davalintide (101), exenatide (89), langlenatide (109), lixisenatide (99), pramlintide (74), seglitide (57)

antidiarrhoeal: lagatide (75)

antithrombotic: eptifibatide (78)

antiviral: enfuvirtide (85), tifuvirtide (91)

autoimmune disorders: dirucotide (100)

atrial natriuretic factor type substances: anaritide (57), carperitide (65), cenderitide (105), neseritide (80), ularitide (69)

calcium sensing receptor agonist: velcalcetide (109)

cicatrisation promoter: ensereptide (107)

diagnostic: betiatide (58), bibapcitide (78), ceruletide (34), depreotide (80), flotegatide (18F) (108), fluciclatide (18F) (103), maraciclitate (103), mertiatide (60), pendetide (70), technetium (99m-Tc) apcitide (78), technetium (99m-Tc) etarfolatide (107), teriparatide (50)

expectorant (in cystic fibrosis): lancovutide (99)

gastro-intestinal bleeding/antineoplastic: edotreotide (84), ilatreotide (66), lanreotide (64), octreotide (52), pentetreotide (66), vapreotide (62)

gastrointestinal functions normalizing agent: linaclotide (96), plecanatide (104)

growth stimulant-veterinary: nosiheptide (35)
gut motility increasing: ociltide (52)

hormone analogues: abaloparatide (109), semparatide (80), teriparatide (50) (see also diagnostic)

immunological agents - antineoplastic: almurtide (74), delmitide (92), edratide (89), goralatide (72), mifamurtide (95), murabutide (49), paclitaxel trevatide (109), pentigetide (60), pimelautide (53), preza tide copper acetate (67), rolipoltide (94), romurtide (61), tabilautide (60), temurtide (60), tigapotide (95),

inhibition of growth hormone release: pasireotide (90)
kallicrein inhibitor: ecallantide (93)
melanocortin receptor agonist: afamelanotide (100), bremelanotide (95)
neuromodulator: davunetide (100), ebiratide (56), obinepitide (96)
peptic ulcer: sulglicotide (29), triletide (50)
pulmonary surfactant: lusupultide (80), sinapultide (78)

sedative: emideltide (70)

thrombin fragment: rusalatide (96)

transforming growth factor inhibitor: disitertide (99)
treatment of Alzheimer's disease: vanutide cridificar (100)
treatment of Parkinson's disease: doreptide (58), pareptide (38)
treatment of coeliac disease: larazotide (99)

-glutide Glucagon-like Peptide (GLP) analogues
  USAN
  albiglutide (97), dulaglutide (103), elsiglutide (104), liraglutide (87), semaglutide (101),
  taspoglutide (99), teduglutide (90)

-motide immunological agents for active immunization
  abecomotide (109), alicdamotide (109), amilomotide (105), asudemotide (107), disomotide
  (94), elpamotide (103), latromotide (107), ovemotide (94), pradimotide (107), tanurmotide
  (109), tecemotide (108), tertiomotide (98), tiplimotide (82), trepmamotide (107)

  (b) defibrotide (44) (nucleotide), diamfenetide (28) (fasciolicide), diclometide (19) (behaviour
  modifier), fludroxy cortide (12), glisentide (58)

  (c) angiotensin II (65), angiotensinamide (12)
-tidine  histamine-H₂-receptor antagonists, cimetidine derivatives

G.2.2.0  (BAN: H₂-receptor antagonists of the cimetidine group)
(USAN: H₂-receptor antagonists (cimetidine type))

![Chemical structure of histamine-H₂-receptor antagonists](image)

(a)  bisfentidine (57), cimetidine (33), dalcotidine (76), donetidine (56), ebrotidine (57),
etintidine (44), famotidine (48), lafutidine (70), lamtidine (48), lavoltidine (61) (previously
loxtidine (48)), lupiditone (53), mifentidine (50), niperotidine (54), nizatidine (48),
osutidine (76), oxmetidine (44), pibutidine (78), quisultidine (47) (replaced by quisultazine
(51)), ramixotidine (55), ranitidine (41), roxatidine (54), sufotidine (54), tiotidine (44),
tuvatidine (54), venritidine (67), zaltidine (54)

(b)  azacitidine (40) (antineoplastic), benzethidine (9), furethidine (9), guanethidine (11),
hexetidine (6), hydroxypethidine (5), pethidine (4), propinetidine (12)

(c)  metiamide (30)

-tiline  see -triptyline

-tinib  tyrosine kinase inhibitors

L.0.0.0

(a)  adelatinib (108), afatinib (104), alectinib (108), amuvatinib (103), axitinib (94),
bafetinib (101), baricitinib (107), binimetinib (109), bosutinib (94), cabozantinib (105),
canertinib (87), ceritinib (109), cobimetinib (107), crizotinib (103), dacomitinib (103),
dasatinib (94), dovitinib (97), erlotinib (85), fedratinib (108), filgotinib (108), fotematinib
(102), fostamatinib (100), ganotinib (108), gefitinib (85), golvatinib (107), ibrutinib
(107), imatinib (86), lapatinib (89), lenvatinib (104), lestaurtinib (91), linsitinib (104),
masitinib (96), momelotinib (107), mubritinib (90), neratinib (97), nilotinib (95),
oclacinib (105), orantinib (103), pacritinib (104), pelitinib (93), ponatinib (104),
pozotinib (108), quizartinib (104), radotinib (104), ralmetinib (109), rebastinib (107),
refametinib (106), ruxolitinib (103), sapitinib (106), saracatinib (99), selumetinib (100),
sunitinib (93), tandutinib (91), telatinib (96), tivantinib (103), tofacitinib (105),
trametinib (105), varlitinib (102)

-tirelin  see -relin
-tizide diuretics, chlorothiazide derivatives

N.1.2.1 (USAN: thiazide: diuretics (thiazide derivatives))

(a) altizide (13), bemetizide (27), butizide (13), carmetizide (30), epitizide (13), hydrobentizide (14), mebutizide (15), paraflutizide (16), penflutizide (29), sumetizide (20)

(c) bendroflumethiazide (11), benzthiazide (10), chlorothiazide (8), cyclopenthiazide (12), cyclothiazide (12), disulfamide (11), ethiazide (14), flumethiazide (10), hydrochlorothiazide (10), hydroflumethiazide (10), methyclothiazide (11), polythiazide (12), teclothiazide (12), trichlormethiazide (11)

-tocin oxytocin derivatives

Q.1.2.0

(a) argiprestocin (13), aspartocin (11), carbetocin (45), cargutocin (35), demoxytocin (22), nacartocin (49), oxytocin (13)

-toin (d) antiepileptics, hydantoin derivatives

A.3.1.1

(a) albutoin (13), doxenitoin (31), ethotoin (6), fosphenytoin (62), imepitooin (96), mephenytoin (1), metetoin (12), phenytoin (4)

ropitooin (40) (H.2.0.0.)

(b) clodantoin (13) (antifungal), nitrofurantoin (11) (antibacterial)

-trakn see -kin

-trakinra see -kinra

-tredakin see -kin
INN – The use of stems

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**-trexate**  
**folic acid analogues**

L.4.0.0  
(USAN: antimetabolites (folic acid analogues))

![Chemical structure](image)

(a) edatrexate (61), ketotrexate (50), methotrexa (10), pralatrexate (92), trimetrexate (46)

(c) aminopterin sodium (04)

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**-trexed**  
**antineoplastics; thymidylate synthetase inhibitors**

L.0.0.0

nolatrexed (78), pemetrexed (78), plevitrexed (89), raltitrexed (94)

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**-tricin**  
**antibiotics, polyene derivatives**

S.6.2.0

(a) mepartricin (34), partricin (27)

(b) tyrothricin (1)

(c) amphotericin B (10), candicidin (17), filipin (20), hachimycin (23), hamycin (17), levorin (15), mocimycin (28), natamycin (15), nystatin (6), pecilocin (16)

---

**tril/trilat**  
**endopeptidase inhibitors**

H.3.0.0

candoxatril (62), candoxatrilat (62), sacubitril (109)

- **-dotril**  
dexecadotril (73), ecadotril (68), fasidotril (74), racecadotril (73)

- **-lutril**  
daglutril (90)

- **-patril/-patrilat**  
gemopatrilat (84), ilepatril (95), omapatrilat (78), sampatrilat (74)
-triptan  serotonin (5-HT₁) receptor agonists, sumatriptan derivatives
C.0.0.0
(a)  almotriptan (76), avitriptan (76), donitriptan (82), eletriptan (74), frovatriptan (78), naratriptan (69), oxitriptan (39), rizatriptan (75), sumatriptan (59), zolmitriptan (74)
(c)  alniditan (72)

-triptylene  antidepressants, dibenzo[a,d]cycloheptane or cycloheptene derivatives
C.3.2.0 (USAN: antidepressants (dibenzo[a,d]cycloheptane derivatives))
(a)  amitriptyline (11), butriptyline (16), cotriptyline (26), intriptyline (26), nortriptyline (12), octriptyline (33), protriptyline (14), amitriptylineoxide (36), demexiptiline (43), levoprotiline (56), noxiptiline (20), oxaprotiline (45), setiptiline (56)
(b)  oxitriptyline (21) (anticonvulsant)
(c)  hepzidine (15)
see also Pharm S/Nom 970

-troban  thromboxane A₂-receptor antagonists; antithrombotic agents
I.2.1.0 (USAN: antithrombotics (thromboxane A₂ receptor antagonists))
argatroban (57), daltroban (57), domitroban (73), ifetroban (71), linotroban (69), mipitroban (73), ramatroban (73), sulotroban (55), terutroban (93)

-trodam see -ast

trop  atropine derivatives
E.2.0.0 (USAN: trop- ; –trop- or -trop)
(a)  parasympatholytic/anticholinergic: E.2.2.0:
tertiary amines: atropine oxyde (12), benzatropine (4), decitropine (18), etybenzatropine (12), eucatropine (1), tropatepine (28), tropicamide (11), tropigline (8), tropodifene (18)
closely related:
esbatropate (65)

quaternary ammonium salts:
atropine methonitrate (4), butropium bromide (30), ciclotropium bromide (50),
cimetropium bromide (51), darotropium bromide (99), flutropium bromide (50),
homatropine methylbromide (1), ipratropium bromide (28), octatropium methylbromide
(10), oxtropium bromide (36), phenactropinium chloride (8), ritropirronium bromide (33),
sevitropium mesilate (56), sintropium bromide (47), sultroponium (18), tematropium
metilsulfate (64), tiotropium bromide (67), tipropium bromide (42), tropenziline bromide
(11), xenytropium bromide (15)

various:
clobenztropine (13) (antihistaminic), cyheptropine (15) (antiarrhythmic), deptropine (12)
(antiasthmatic), revatropate (74) (bronchodilator), tropabazate (41) (tranquillizer),
tropanserin (55) (serotonin receptor antagonist), tropapride (48) (antipsychotic), tiroprine
(20) (respiratory disorders), tropantiol (97) (chelating agent), tropisetron (62) (serotonin
antagonist)

(b) dextropropoxyphene (7), somatropin (56), somatropin pegol (103), varfollitropin alfa (101)

(c) parasympatholytic/anticholinergic, tertiary amines:
postkine (8), prampine (11), tigloidin (14)

various:
zepastine (26) (antihistaminic)

- uplase  urokinase type plasminogen activator, see -ase item VII

- uridine  uridine derivatives used as antiviral agents and as antineoplastics
  (USAN: antivirals; antineoplastics (uridine derivatives))

S.5.3.0
L.4.0.0

L.4.0.0: broxuridine (30), doxifluridine (44)

related: carmofur (45), clanfenur (58), tegafur (41)

S.5.3.0: fialuridine (68), floxuridine (16), fosfluridine tidoxil (93), idoxuridine (17),
navuridine (84), ropidoxuridine (97), trifluridine (37), uridine triacetate (103)
-vudine (USAN: -vudine: antineoplastics; antivirals (zidovudine type))

(a) alovudine (68), brivudine (59), clevudine (78), epervudine (61), fosalvudine tidoxil (95), fozivudine tidoxil (73), lamivudine (66), netivudine (72), sorivudine (64), stavudine (65), telbivudine (88), zidovudine (56)

(c) edoxudine (52)

-vaptan (x) vasopressin receptor antagonists

H.0.0.0

(a) conivaptan (82), lixivaptan (83), mozavaptan (87), nelivaptan (98), relcovaptan (82), satavaptan (93), tolvaptan (83)

-vastatin see -stat

-vec see -gene for gene therapy products

-verine spasmolytics with a papaverine-like action

F.1.0.0 (USAN: spasmolytic agents (papaverine type))

(a) alverine (16), amifloverine (28), bietamiverine (6), butaverine (13), camiverine (29), caroverine (28), clofeverine (31), demelverine (17), denaverine (25), dexsecoverine (53), dicycloverine (6), dixhexyverine (4), dipripoverine (10), diprotaverine (51), drotaverine (17), elziverine (57), ethaverine (4), febuverine (27), fenoverine (28), floverine (28), heptaverine (16), ibuverine (21), idaverine (55), mebeverine (14), milverine (52), mofloverine (28), moxaverine (36), nafiverine (16), niceverine (15), octaverine (18), pargeverine (38), pentoxyverine (6), pramiverine (21), preoverine (41), propiverine (45), rociverine (33), salfluverine (29), salverine (15), secoverine (38), temiverine (76), zardaverine (59)

Related:
fenpiverinium bromide (26), pinaverium bromide (32)

(b) cinnamaverine (10) (anticholinergic, tert. amine), diaveridine (18)

(c) spasmolytics chemically related to some of the above INN ending in -verine

butetamate (17), butinoline (14), camylofin (12), cinnamedrine (19), cyclandelate (8), difemerine (17), diisopromin (11), dimoxylin (1), fenpiprane (17), fenpyramidol (12), metindizate (16), oxybutynin (13), papaveroline (29), pentapiperide (10), prozamine (14), triclazate (10), tropenziline bromide (11)
<table>
<thead>
<tr>
<th>vin- and -vin- (x)</th>
<th>vinca alkaloids</th>
</tr>
</thead>
<tbody>
<tr>
<td>(USAN: vin-; or -vin-)</td>
<td></td>
</tr>
<tr>
<td>(a) B.1.0.0 stimulation of cerebrovascular circulation</td>
<td>apovincamine (48), brovincamine (42), vinburnine (45), vincamine (22), vincanol (37), vincantril (51), vincinate (47), vindeburnol (49), vinmegallate (59), vinpoline (35), vintoperol (61)</td>
</tr>
<tr>
<td>L.5.0.0 cytostatic</td>
<td>vinblastine (12), vincristine (13), vindesine (35), vinepide (50), vinflunine (75), vinformide (38), vinfosiltine (64), vinglycinate (16), vinleucinol (64), vinylurosine (13), vinorelbine (57), vinrosidine (13), vintafolide (107), vin triptol (51), vinzolidine (46)</td>
</tr>
<tr>
<td>(b) barbiturates</td>
<td>vinbarbital (1), vinylbital (12)</td>
</tr>
<tr>
<td>others: vinco fos (28) (phosphate, anthelmintic), vintiamol (16) (vitamin B derivative, antineuralgic)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>vir</th>
<th>antivirals (undefined group)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S.5.3.0</td>
<td>(USAN: -vir; -vir; or vir-: antivirals)</td>
</tr>
<tr>
<td>(a)</td>
<td>alisporivir (100), alvircept sudotox (69), amdoxovir (85), amen amevir (100), amitivir (67), at evirdine (69), balapiravir (100), bevirimat (96), daclatasvir (107), delavirdine (71), denotivir (70), dutegravir (105), efavirenz (78), elvitegravir (97), enfuvirtide (85), envir adene (49), enviroxime (44), favipiravir (98), ledipasvir (109), letemovir (104), litomeglovir (84), loviride (70), maribavir (80), nevirapine (66), opaviraline (83), pirodavir (63), pocapavir (107), pritelivir (106), raltegravir (97), ribavirin (31), rupintrivir (88), taribavirin (95), talviralin (75), tecovirimat (99), tifuvirtide (91), tivraine (74), tomeglovir (84), trovirdine (73), umifenovir (103), vapendavir (106), viroxime (49), zin viroxime (44)</td>
</tr>
<tr>
<td>-amivir</td>
<td>neuraminidase inhibitors: laninamivir (100), oseltamivir (80), per amivir (86), zanamivir (72)</td>
</tr>
<tr>
<td>-buvir</td>
<td>RNA polymerase (NS5B) inhibitors: dasabuvir (109), deleobuvir (108), filibuvir (101), lombuvir (107), nesbuvir (98), setrobuvir (106), sofosbuvir (108), tegobuvir (103)</td>
</tr>
<tr>
<td>-cavir</td>
<td>carbocyclic nucleosides: abacavir (76), entecavir (82), lobucavir (72)</td>
</tr>
<tr>
<td>-ciclovir</td>
<td>bicyclic heterocycle compounds: aciclovir (42), buciclovir (52), desciclovir (55), detiviclovir (86), famciclovir (61), ganciclovir (56), lagociclovir (101), lagociclovir valactate (101), omaciclovir (84), penciclovir (61), ro ciclovir (62), tiviciclovir (86), valaciclovir (69), valganciclovir (78), valomaciclovir (84)</td>
</tr>
</tbody>
</table>
**-fovir**  
phosphonic acid derivatives: adefovir (72), alamivudine (89), besifovir (105), cidofovir (72), pradefovir (93), tenofovir (82)

**-gosivir**  
glicoside inhibitors: celgosivir (77)

**-navir**  
HIV protease inhibitors: amprenavir (79), atazanavir (88), brecanavir (94), darunavir (88), droxinavir (74), fosamprenavir (83), indinavir (74), lasinavir (76), lopinavir (80), mozenavir (84), nelfinavir (76), palinavir (74), ritonavir (74), saquinavir (69), telinavir (73), tipranavir (80)

**-previr**  
Hepatitis Virus C (HVC) protease inhibitors: asunaprevir (105), boceprevir (97), ciluprevir (90), danoprevir (102), faldaprevir (106), narlaprevir (102), neceprevir (107), simaprevir (105), sovaprevir (106), telaprevir (94), vaniprevir (103), vedoprevir (109)

**-virine**  
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI): capravirine (83), dapivirine (86), doravirine (109), emivirine (82), etravirine (88), fosdevirine (103), lersivirine (101), rilpivirine (82)

**-viroc**  
CCR5 (Chemokine CC motif receptor 5) receptor antagonists: ancriviroc (92), aplaviroc (94), cenicriviroc (103), maraviroc (94), vicriviroc (94)

**-virsen**  
see -rsen

**-virumab**  
see -mab

(b)  
virginiamycin (18), viridofulvin (16)

(c)  
aranotin (21), arildone (38), avridine (50), didanosine (64), disoxaril (55), dimepranol (42), foscarnet sodium (42), fosfonet sodium (35), ketoxal (22), impacarzine (36), inosine (42), lodenosine (75), metisazone (14), moroxydine (22), pleconaril (77), tilorone (24), xenazoic acid (11)

**-vircept**  
see -cept

**-virine**  
see -vir

**-viroc**  
see -vir

**-virsen**  
see -rsen

**-virumab**  
see -mab
-vos see -fos

-vudine see -uridine

-xaban blood coagulation factor X_A inhibitors, antithrombotics

I.2.0.0
(a) apixaban (93), betrixaban (98), darexaban (104), edoxaban (99), eribaxaban (98), fidexaban (91), letaxaban (104), otamixaban (86), razaxaban (90), rivaroxaban (90)

-xanox see -ox/-alox

-yzine see -izine

-zafone alozafone derivatives

C.1.0.0

(a) alozafone (40), avizafone (64), ciprazafone (50), dinazafone (46), dulozafone (56), lorzafone (48), oxazafone (45), rilmazafone (55)

-zepine see -pine

-zolast see -ast

-zomib proteasome inhibitors

L.0.0.0 (USAN: proteozome inhibitors)

bortezomib (88), carfilzomib (97), delanzomib (105), ixazomib (104), marizomib (102), oprozomib (107)
### -zone

**see -buzone**

<table>
<thead>
<tr>
<th>-zotan</th>
<th>serotonin $5$-HT$_{1A}$ receptor agonists/antagonists acting primarily as neuroprotectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.0.0.0</td>
<td>ebalzotan (72), lecozotan (93), naluzotan (101), osemozotan (87), piclozotan (92), robalzotan (90), sarizotan (94)</td>
</tr>
</tbody>
</table>
ANNEX 1

PROCEDURE FOR THE SELECTION OF RECOMMENDED INTERNATIONAL NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES

The following procedure shall be followed by the World Health Organization (hereinafter also referred to as “WHO”) in the selection of recommended international nonproprietary names for pharmaceutical substances, in accordance with resolution WHA3.11 of the World Health Assembly, and in the substitution of such names.

Article 1
Proposals for recommended international nonproprietary names and proposals for substitution of such names shall be submitted to WHO on the form provided therefor. The consideration of such proposals shall be subject to the payment of an administrative fee designed only to cover the corresponding costs of the Secretariat of WHO (“the Secretariat”). The amount of this fee shall be determined by the Secretariat and may, from time to time, be adjusted.

Article 2
Such proposals shall be submitted by the Secretariat to the members of the Expert Advisory Panel on the International Pharmacopoeia and Pharmaceutical Preparations designated for this purpose, such designated members hereinafter referred to as “the INN Expert Group”, for consideration in accordance with the “General principles for guidance in devising International Nonproprietary Names for Pharmaceutical Substances”, annexed to this procedure. The name used by the person discovering or first developing and marketing a pharmaceutical substance shall be accepted, unless there are compelling reasons to the contrary.

Article 3
Subsequent to the examination provided for in article 2, the Secretariat shall give notice that a proposed international nonproprietary name is being considered.

(a) Such notice shall be given by publication in WHO Drug Information and by letter to Member States and to national and regional pharmacopoeia commissions or other bodies designated by Member States.

(i) Notice shall also be sent to the person who submitted the proposal (“the original applicant”) and other persons known to be concerned with a name under consideration.

(b) Such notice shall:
(i) set forth the name under consideration;
(ii) identify the person who submitted the proposal for naming the substance, if so requested by such person;
(iii) identify the substance for which a name is being considered;
(iv) set forth the time within which comments and objections will be received and the person and place to whom they should be directed;
(v) state the authority under which WHO is acting and refer to these rules of procedure.

2 See Annex 2
3 Before 1987, lists of international nonproprietary names were published in the Chronicle of the World Health Organization.
In forwarding the notice, the Secretariat shall request that Member States take such steps as are necessary to prevent the acquisition of proprietary rights in the proposed name during the period it is under consideration by WHO.

**Article 4**
Comments on the proposed name may be forwarded by any person to WHO within four months of the date of publication, under article 3, of the name in *WHO Drug Information*.

**Article 5**
A formal objection to a proposed name may be filed by any interested person within four months of the date of publication, under article 3, of the name in *WHO Drug Information*. Such objection shall:
- (i) identify the person objecting;
- (ii) state his or her interest in the name;
- (iii) set forth the reasons for his or her objection to the name proposed.

**Article 6**
Where there is a formal objection under article 5, WHO may either reconsider the proposed name or use its good offices to attempt to obtain withdrawal of the objection. Without prejudice to the consideration by WHO of a substitute name or names, a name shall not be selected by WHO as a recommended international nonproprietary name while there exists a formal objection thereto filed under article 5 which has not been withdrawn.

**Article 7**
Where no objection has been filed under article 5, or all objections previously filed have been withdrawn, the Secretariat shall give notice in accordance with subsection (a) of article 3 that the name has been selected by WHO as a recommended international nonproprietary name.

**Article 8**
In forwarding a recommended international nonproprietary name to Member States under article 7, the Secretariat shall:
- (a) request that it be recognized as the nonproprietary name for the substance; and
- (b) request that Member States take such steps as are necessary to prevent the acquisition of proprietary rights in the name and to prohibit registration of the name as a trademark or trade name.

**Article 9**
(a) In the extraordinary circumstance that a previously recommended international nonproprietary name gives rise to errors in medication, prescription or distribution, or a demonstrable risk thereof, because of similarity with another name in pharmaceutical and/or prescription practices, and it appears that such errors or potential errors cannot readily be resolved through other interventions than a possible substitution of a previously recommended international nonproprietary name, or in the event that a previously recommended international nonproprietary name differs substantially from the nonproprietary name approved in a significant number of Member States, or in other such extraordinary circumstances that justify a substitution of a recommended international nonproprietary name, proposals to that effect may be filed by any interested person. Such proposals shall be submitted on the form provided therefore and shall:
- (i) identify the person making the proposal;
- (ii) state his or her interest in the proposed substitution; and
- (iii) set forth the reasons for the proposal; and
(iv) describe, and provide documentary evidence regarding, the other interventions undertaken in an effort to resolve the situation, and the reasons why these other interventions were inadequate.

Such proposals may include a proposal for a new substitute international nonproprietary name, devised in accordance with the General principles, which takes into account the pharmaceutical substance for which the new substitute international nonproprietary name is being proposed.

The Secretariat shall forward a copy of the proposal, for consideration in accordance with the procedure described in subsection (b) below, to the INN Expert Group and the original applicant or its successor (if different from the person bringing the proposal for substitution and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations).

In addition, the Secretariat shall request comments on the proposal from:

(i) Member States and national and regional pharmacopoeia commissions or other bodies designated by Member States (by including a notice to that effect in the letter referred to in article 3(a), and

(ii) any other persons known to be concerned by the proposed substitution.

The request for comments shall:

(i) state the recommended international nonproprietary name that is being proposed for substitution (and the proposed substitute name, if provided);

(ii) identify the person who submitted the proposal for substitution (if so requested by such person);

(iii) identify the substance to which the proposed substitution relates and reasons put forward for substitution;

(iv) set forth the time within which comments will be received and the person and place to whom they should be directed; and

(v) state the authority under which WHO is acting and refer to these rules of procedure.

Comments on the proposed substitution may be forwarded by any person to WHO within four months of the date of the request for comments.

(b) After the time period for comments referred to above has elapsed, the Secretariat shall forward any comments received to the INN Expert Group, the original applicant or its successor and the person bringing the proposal for substitution. If, after consideration of the proposal for substitution and the comments received, the INN Expert Group, the person bringing the proposal for substitution and the original applicant or its successor all agree that there is a need to substitute the previously recommended international nonproprietary name, the Secretariat shall submit the proposal for substitution to the INN Expert Group for further processing.

Notwithstanding the foregoing, the original applicant or its successor shall not be entitled to withhold agreement to a proposal for substitution in the event the original applicant or its successor has no demonstrable continuing interest in the recommended international nonproprietary name proposed for substitution.
In the event that a proposal for substitution shall be submitted to the INN Expert Group for further processing, the INN Expert Group will select a new international nonproprietary name in accordance with the General principles referred to in article 2 and the procedure set forth in articles 3 to 8 inclusive. The notices to be given by the Secretariat under article 3 and article 7, respectively, including to the original applicant or its successor (if not the same as the person proposing the substitution, and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations), shall in such event indicate that the new name is a substitute for a previously recommended international nonproprietary name and that Member States may wish to make transitional arrangements in order to accommodate existing products that use the previously recommended international nonproprietary name on their label in accordance with national legislation.

If, after consideration of the proposal for substitution and the comments received in accordance with the procedure described above, the INN Expert Group, the original applicant or its successor and the person bringing the proposal for substitution do not agree that there are compelling reasons for substitution of a previously recommended international nonproprietary name, this name shall be retained (provided always that the original applicant or its successor shall not be entitled to withhold agreement to a proposal for substitution in the event that the original applicant or its successor has no demonstrable continuing interest in the recommended international nonproprietary name proposed to be substituted). In such an event, the Secretariat shall advise the person having proposed the substitution, as well as the original applicant or its successor (if not the same as the person proposing the substitution, and provided that the original applicant or its successor is known or can be found through diligent effort, including contacts with industry associations), Member States, national and regional pharmacopoeia commissions, other bodies designated by Member States, and any other persons known to be concerned by the proposed substitution that, despite a proposal for substitution, it has been decided to retain the previously recommended international nonproprietary name (with a description of the reason(s) why the proposal for substitution was not considered sufficiently compelling).
ANNEX 2

GENERAL PRINCIPLES FOR GUIDANCE IN DEVISING INTERNATIONAL NONPROPRIETARY NAMES FOR PHARMACEUTICAL SUBSTANCES*

1. International Nonproprietary Names (INN) should be distinctive in sound and spelling. They should not be inconveniently long and should not be liable to confusion with names in common use.

2. The INN for a substance belonging to a group of pharmacologically related substances should, where appropriate, show this relationship. Names that are likely to convey to a patient an anatomical, physiological, pathological or therapeutic suggestion should be avoided.

These primary principles are to be implemented by using the following secondary principles:

3. In devising the INN of the first substance in a new pharmacological group, consideration should be given to the possibility of devising suitable INN for related substances, belonging to the new group.

4. In devising INN for acids, one-word names are preferred; their salts should be named without modifying the acid name, e.g. “oxacillin” and “oxacillin sodium”, “ibufenac” and “ibufenac sodium”.

5. INN for substances which are used as salts should in general apply to the active base or the active acid. Names for different salts or esters of the same active substance should differ only in respect of the name of the inactive acid or the inactive base.

For quaternary ammonium substances, the cation and anion should be named appropriately as separate components of a quaternary substance and not in the amine-salt style.

6. The use of an isolated letter or number should be avoided; hyphenated construction is also undesirable.

7. To facilitate the translation and pronunciation of INN, “f” should be used instead of “ph”, “t” instead of “th”, “e” instead of “ae” or “oe”, and “i” instead of “y”; the use of the letters “h” and “k” should be avoided.

8. Provided that the names suggested are in accordance with these principles, names proposed by the person discovering or first developing and marketing a pharmaceutical preparation, or names already officially in use in any country, should receive preferential consideration.

9. Group relationship in INN (see Guiding Principle 2) should if possible be shown by using a common stem. The following list contains examples of stems for groups of substances, particularly for new groups. There are many other stems in active use. Where a stem is shown without any hyphens it may be used anywhere in the name.
<table>
<thead>
<tr>
<th>Latin</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>-acum</td>
<td>-ac anti-inflammatory agents, ibufenac derivatives</td>
</tr>
<tr>
<td>-adolum</td>
<td>-adol analgesics</td>
</tr>
<tr>
<td>-adol-</td>
<td>-adol- antiasthmatic, antiallergic substances not acting primarily as antihistaminics</td>
</tr>
<tr>
<td>-astum</td>
<td>-ast antiasthmatic, antiallergic substances not acting primarily as antihistaminics</td>
</tr>
<tr>
<td>-astinum</td>
<td>-astine antihistaminics</td>
</tr>
<tr>
<td>-azepamum</td>
<td>-azepam diazepam derivatives</td>
</tr>
<tr>
<td>bol</td>
<td>bol anabolic steroids</td>
</tr>
<tr>
<td>-cain-</td>
<td>-cain- class I antiarrhythmics, procainamide and lidocaine derivatives</td>
</tr>
<tr>
<td>-cainum</td>
<td>-caine local anaesthetics</td>
</tr>
<tr>
<td>cef-</td>
<td>cef- antibiotics, cefalosporanic acid derivatives</td>
</tr>
<tr>
<td>-cillinum</td>
<td>-cillin antibiotics, 6-aminopenicillanic acid derivatives</td>
</tr>
<tr>
<td>-conazolum</td>
<td>-conazole systemic antifungal agents, miconazole derivatives</td>
</tr>
<tr>
<td>cort</td>
<td>cort corticosteroids, except prednisolone derivatives</td>
</tr>
<tr>
<td>-coxibum</td>
<td>-coxib selective cyclo-oxygenase inhibitors</td>
</tr>
<tr>
<td>-entanum</td>
<td>-entan endothelin receptor antagonants</td>
</tr>
<tr>
<td>gab</td>
<td>gab gabamimetic agents</td>
</tr>
<tr>
<td>gado-</td>
<td>gado- diagnostic agents, gadolinium derivatives</td>
</tr>
<tr>
<td>-gatranum</td>
<td>-gatran thrombin inhibitors, antithrombotic agents</td>
</tr>
<tr>
<td>gest</td>
<td>gest steroids, progestogens</td>
</tr>
<tr>
<td>gli</td>
<td>gli antihyperglycaemics</td>
</tr>
<tr>
<td>io-</td>
<td>io- iodine-containing contrast media</td>
</tr>
<tr>
<td>-metacinum</td>
<td>-metacin anti-inflammatory, indomethacin derivatives</td>
</tr>
<tr>
<td>-mycinum</td>
<td>-mycin antibiotics, produced by Streptomyces strains</td>
</tr>
<tr>
<td>-nidazolum</td>
<td>-nidazole antiprotosolar and radiosensitizers, metronidazole derivatives</td>
</tr>
<tr>
<td>-ololum</td>
<td>-olol β-adrenoreceptor antagonants</td>
</tr>
<tr>
<td>-oxacinum</td>
<td>-oxacin antibacterials, nalidixic acid derivatives</td>
</tr>
<tr>
<td>-platinum</td>
<td>-platin antineoplastic agents, platinum derivatives</td>
</tr>
<tr>
<td>-poetinum</td>
<td>-poetin erythropoietin type blood factors</td>
</tr>
<tr>
<td>-pril(at)um</td>
<td>-pril(at) angiotensin-converting enzyme inhibitors</td>
</tr>
<tr>
<td>-profenum</td>
<td>-profen anti-inflammatory agents, ibuprofen derivatives</td>
</tr>
<tr>
<td>prost</td>
<td>prost prostaglandins</td>
</tr>
<tr>
<td>-relinum</td>
<td>-relin pituitary hormone release-stimulating peptides</td>
</tr>
<tr>
<td>-sartanum</td>
<td>-sartan angiotensin II receptor antagonists, antihypertensive (non-peptidic)</td>
</tr>
<tr>
<td>-vaptanum</td>
<td>-vaptan vasopressin receptor antagonants</td>
</tr>
<tr>
<td>vin-</td>
<td>vin- vinca alkaloids</td>
</tr>
</tbody>
</table>

* In its twentieth report (WHO Technical Report Series, No. 581, 1975), the WHO Expert Committee on Nonproprietary Names for Pharmaceutical Substances reviewed the general principles for devising, and the procedures for selecting, international nonproprietary names (INN) in the light of developments in pharmaceutical compounds in recent years. The most significant change has been the extension to the naming of synthetic chemical substances of the practice previously used for substances originating in or derived from natural products. This practice involves employing a characteristic “stem” indicative of a common property of the members of a group. The reasons for, and the implications of, the change are fully discussed.
ANNEX 3

General policies for monoclonal antibodies

• INN for monoclonal antibodies (mAbs) are composed of a prefix, a substem A, a substem B and a suffix.

• The common stem for mAbs is -mab, placed as a suffix.

• The stem -mab is to be used for all products containing an immunoglobulin variable domain which binds to a defined target.

• Substem B indicates the species on which the immunoglobulin sequence of the mAb is based:

<table>
<thead>
<tr>
<th>Substem B</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>rat</td>
</tr>
<tr>
<td>axo (pre-sub-stem)</td>
<td>rat/mouse</td>
</tr>
<tr>
<td>e</td>
<td>hamster</td>
</tr>
<tr>
<td>i</td>
<td>primate</td>
</tr>
<tr>
<td>o</td>
<td>mouse</td>
</tr>
<tr>
<td>u</td>
<td>human</td>
</tr>
<tr>
<td>xi</td>
<td>chimeric</td>
</tr>
<tr>
<td>xizu</td>
<td>chimeric/humanized</td>
</tr>
<tr>
<td>zu</td>
<td>humanized</td>
</tr>
</tbody>
</table>

The distinction between chimeric and humanized antibodies is as follows:

**Chimeric**: A chimeric antibody is one of which both chain types are chimeric as a result of antibody engineering. A chimeric chain is a chain that contains a foreign variable domain (V-D-J-REGION) (originating from one species other than human, or synthetic) linked to a constant region (C-REGION) of human origin.

**Humanized**: A humanized antibody is one of which both chain types are humanized as a result of antibody engineering. A humanized chain is a chain in which the complementarity determining regions (CDR) of the variable domains are foreign (originating from one species other than human, or synthetic) whereas the remaining chain is of human origin. By extension an antibody is described as humanized if more recent protocols were used for the humanization.

The –xizu- infix is used for an antibody having both chimeric and humanized chains.
The -axo- infix is used for an antibody having both rat and mouse chains.
Substem A indicates the target (molecule, cell, organ) class:

<table>
<thead>
<tr>
<th>Stem</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-b(a)-</td>
<td>bacterial</td>
</tr>
<tr>
<td>-c(i)-</td>
<td>cardiovascular</td>
</tr>
<tr>
<td>-f(u)-</td>
<td>fungal</td>
</tr>
<tr>
<td>-k(i)-</td>
<td>interleukin</td>
</tr>
<tr>
<td>-l(i)-</td>
<td>immunomodulating</td>
</tr>
<tr>
<td>-n(e)- (under discussion)</td>
<td>neural</td>
</tr>
<tr>
<td>-s(o)-</td>
<td>bone</td>
</tr>
<tr>
<td>-tox(a)</td>
<td>toxin</td>
</tr>
<tr>
<td>-t(u)-</td>
<td>tumour</td>
</tr>
<tr>
<td>-v(i)-</td>
<td>viral</td>
</tr>
</tbody>
</table>

In principle, a single letter, e.g. -b- for bacterial is used as substem A. Whenever substem B starts with a consonant (e.g. x or z), to avoid problems in pronunciation, an additional vowel indicated in the table, e.g. -ba- is inserted.

Prefix
The prefix should be random, e.g. the only requirement is to contribute to an euphonious and distinctive name.

Second word
If the product is radiolabelled or conjugated to another chemical, identification of this conjugate is accomplished by use of a separate, second word or acceptable chemical designation. For instance, for mAbs conjugated to a toxin, the suffix -tox can be used in the second word.

If the monoclonal antibody is used as a carrier for a radioisotope, the latter will be listed first in the INN, e.g. technetium (99mTc) nofetumomab merpentan (81)(42).

The prefix peg- can be used for pegylated mAbs, but this should be avoided if it leads to over-long INN. In most cases, it is best to adopt two-word INN for pegylated mAbs, with the first word describing the mAb and the second being pegol or a related designation.

References
2. World Health Organization. International Nonproprietary Names (INN) for biological and biotechnological substances (a review), INN Working Document 05.179, update November 2009*

* These documents are available on the INN Programme Website at:
ANNEX 4

INNs FOR GENE THERAPY PRODUCTS

The following nomenclature scheme was adopted by the members of the INN Expert Group designated to deal with the selection of nonproprietary names in December 2005 after a broad consultative process. These tables show the latest developments.

A two-word name approach has been selected:

**Word 1**
gene component

<table>
<thead>
<tr>
<th>prefix</th>
<th>infix</th>
<th>suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>random to contribute to euphonious and distinctive name</td>
<td>to identify the gene using, when available, existing infixes for biological products or using similar infix as for the protein for which the gene codes.</td>
<td>-(a vowel)gene e.g. -(o)gene</td>
</tr>
<tr>
<td>e.g. -cima-: cytosine deaminase -ermin-: growth factor -kin-: interleukin -lim-: immunomodulator -lip-: human lipoprotein lipase -mul-: multiple gene -stim-: colony stimulating factor -tima-: thymidine kinase -tusu-: tumour suppression</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Word 2**
vector component

<table>
<thead>
<tr>
<th>prefix</th>
<th>infix</th>
<th>suffix</th>
</tr>
</thead>
<tbody>
<tr>
<td>random to contribute to euphonious and distinctive name</td>
<td>e.g. -adeno-: adenovirus -cana-: canarypox virus -foli-: fowlpox virus -herpa-: herpes virus -lenti-: lentivirus -morbilli-: paramyxoviridae morbillivirus -parvo-: adeno-associated virus (parvoviridae dependovirus) -retro-: other retrovirus -vaci-: vaccinia virus</td>
<td>-vec (nonreplicating viral vector) -revec (replicating viral vector) -plasmid (plasmid vector)</td>
</tr>
</tbody>
</table>

In the case of non-plasmid naked DNA products, there is no need for a second word in the name.
In case of antisense oligonucleotides, please refer to the already existing stem –rsen.
## ANNEX 5

Reference to publications containing proposed lists of INNs

<table>
<thead>
<tr>
<th>List no. and reference</th>
<th>List no. and reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 WHO Chronicle 18: 433 (1964)</td>
<td>70 WHO Drug Information 7: No. 4 (1993)</td>
</tr>
<tr>
<td>55 WHO Chronicle 40: No. 1, suppl. (1986)</td>
<td></td>
</tr>
<tr>
<td>56 WHO Chronicle 40: No. 5, suppl. (1986)</td>
<td></td>
</tr>
</tbody>
</table>
ANNEX 6

WHY INNs?

Since the number of drug substances being registered during the last decades is constantly increasing, there is a strong need to ensure the identification of each pharmaceutical compound by a unique, universally available and accepted name. The existence of an international nomenclature system for pharmaceutical products is crucial for the clear identification, safe prescription and dispensing of medicines to patients, and for communication and exchange of information among health professionals and scientists worldwide.

An International Nonproprietary Name (INN) identifies a pharmaceutical substance by a unique name that is globally recognized and is public property. A nonproprietary name is also known as a generic name. Generic names are intended to be used in pharmacopoeias, labeling, advertising, drug regulation and scientific literature.

WHO has a constitutional mandate to offer recommendations to its Member States on any matter that falls within its competence. This includes setting norms and standards for pharmaceutical products moving in international commerce.

The INN system as it exists today was initiated in 1950 by the World Health Assembly resolution WHA3.11 and began operating in 1953, when the first list of International Nonproprietary Names for pharmaceutical substances was published.

So far, some 8800 names have been designated as INNs, and this number is growing every year by some 120 – 150 new INNs.

INNs are selected in close collaboration with national nomenclature commissions (e.g. BAN British Approved name, JAN Japanese Accepted Name, USAN United States Adopted Name etc.). Today, the INN Committee assumes the leading role in assigning generic names to drug substances. Instances where a national generic name for a new pharmaceutical substance is different from the INN are rare exceptions.

As unique names, INNs have to be distinctive in sound and spelling, and should not be liable to confusion with other names in common use (e.g. trade marks). To make INNs universally available they are formally placed by WHO in the public domain, hence their designation as “nonproprietary”. They can be used without any restriction whatsoever to identify pharmaceutical substances. The clear depiction of INNs on labels assures that prescribers and users alike can easily identify the nature of the pharmacologically active substance in a brand product. The use of INNs is already common in research and clinical documentation, while the importance of the Programme is growing further due to the expanding use of generic names for pharmaceutical products.

28/10/2013
INN – The use of stems