RATIONAL USE

The NAPRALERT database: linking traditional and modern medicine

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The WHO Collaborating Centre for Traditional Medicine at the College of Pharmacy, University of Illinois at Chicago is the subject of the fifth article in our series on organizations concerned with the rational use of drugs. The Centre’s unique database of scientifically validated information on medicinal plants offers an interface between their use in traditional and allopathic (Western) systems of medicine and facilitates scientific exploration and evaluation of traditionally used remedies.

Whether estimates that up to 80% of people in developing countries rely at some time on indigenous traditional medicine to meet their health care needs, and it can be assumed that a major part of traditional therapy involves the use of plant extracts. Of the conservatively estimated 250,000 species of higher (flowering) plants that exist on earth, perhaps at least 20% have been employed in traditional medicine. The effectiveness of these medicinal plants is due to the presence of one or more biologically active chemical constituents, although it can be assumed that the placebo effect sometimes contributes to the success of such therapies.

The therapeutic value of some 200-250 of the world’s higher plants has been sufficiently demonstrated scientifically to warrant their inclusion in allopathic (Western) medicine. Virtually all such plants have been discovered through information derived from their use in traditional medicine. Future systematic studies of plants with validated traditional uses will undoubtedly produce additional drugs.

The scientific validation of medicinal plants for inclusion in primary health care systems is a very worthwhile, but monumental task. At a starting point it is logical to draw on the vast published literature on the pharmacological evaluation of plant extracts. A combination of information indicating that a specific plant has been used in an indigenous health care system for centuries, together with efficacy and toxicity data published by several groups of scientists, provides a promising correlation to justify further investigation. NAPRALERT is a computerized database housed in the WHO Collaborating Centre for Traditional Medicine, College of Pharmacy, University of Illinois at Chicago, and is increasingly used for such studies. NAPRALERT, an acronym of NAPRALERT Products ALERT, is a unique database of world literature on the chemical constituents and pharmacology of plant, microbial and animal (primarily marine) extracts. In addition, considerable data on the chemistry and pharmacology (including human studies) of secondary metabolites of known structure, derived from natural sources, are stored in this system. Data are obtained from some 700 scientific journals and several abstract services. Around 500 scientific articles per month are added to the NAPRALERT data-structure. The system can be used in a number of ways, ranging from simple retrieval of information to complex problem solving (see box).

Applications of the NAPRALERT database to traditional medicine

The most common types of information requested from NAPRALERT are ethnomedical data, results of biological tests carried out on extracts of plant, microbes or animals; and secondary chemical constituents reported to be present in plants, microbes or animals. These are collectively referred to as the "NAPRALERT 3-PART PROFILE" (see box).

Other types of data available

Citations containing information on almost any subject concerning natural products can be retrieved, or a list of organisms involved in the search parameter can be provided, together with a bibliography. Other types of profiles can be generated based on the interests and needs of the user.

Verifying rational use

An important practical application of the NAPRALERT database, is analysis of data to determine or verify the rational use of specific medicinal plants in various traditional medical systems. One example was an analysis of published experimental data on plant extracts prepared from 248 plants used in traditional Chinese medicine, as described in a book intended for use by the "barefoot doctors" in the Beijing area. To evaluate potential effectiveness, it was important to determine whether one or more components of the prescription had a valid pharmacological basis of action. This

NAPRALERT DATA

Ethnomedical profile

The "ethnomedical profile" provides three major types of information: a) synonymous names found in articles; these may or may not be legitimate scientific names for the organism in question but the synonym alerts the user to the fact that more than one plant name may have to be presented to the database for information; b) common (vernacular) names for the plant (in several languages); c) ethnomedical (folkloric, traditional) medical uses for the plant. A complete list of literature citations is provided in the print-out.

Pharmacological profile

This profile provides all information in the database on testing for pharmacological and/or biological effects of a plant, animal, fungal extract or pure compound. A typical search would provide the following:

- Type of pharmacological test
- Route of administration
- Sex of test species
- Strength of activity
- Type of extract tested
- Dose employed
- Literature citations

Phytochemistry profile

The "phytochemistry profile" provides the following information, in tabular form, for all secondary constituents reported to be present in, or which were isolated from, the plant, microbe or animal:

- Scientific name of the organism
- Name of the constituent
- Major chemical class of the constituent
- Percentage yield of the constituent
- Country or geographic area where the plant was collected
- Literature citations
Rational use of drugs in the Balkans: a WHO workshop

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Before the war in Bosnia, Lake Ohrid in the former Yugoslav Republic of Macedonia (FYROM) used to be a popular holiday resort. Frequent charter flights brought tourists from Belgrade, Frankfurt and Amsterdam, and morning coffee was advertised in several languages. Now the tourists have gone and Ohrid is again the sleepy fishing town it was many years ago. It therefore seemed an ideal spot to isolate the teachers from the Skopje University medical and pharmaceutical faculties from the worries of the outside world and discuss the rational use of drugs and an essential drugs policy.

Prescribing patterns in FYROM, currently one of Europe’s poorest nations, have been influenced by many extraneous factors, such as aggressive marketing of drugs of dubious efficacy and safety; long-standing therapeutic habits; lack of peer review on the use of both old and new drugs, as well as erratic shortages.

WHO’s Regional Office for Europe was approached by the Ministry of Health of the new Republic to contribute to a review of the pharmaceutical sector. The basic assumption was that WHO would advise on the selection and procurement of drugs as emergency humanitarian aid. However, an initial fact-finding mission showed that the real problem was not so much a shortage of medicines but the optimal use of the available resources. Curricula in both medicine and pharmacy were urgently in need of updating to reflect current practice, knowledge and issues.

A series of complementary activities addressing the present difficulties in the pharmaceutical sector was planned with the Government and with support from the newly appointed WHO Collaborating Centre for Drug Policy and Safety at the Wolfson Unit of Clinical Pharmacology, University of Newcastle-upon-Tyne, UK. These activities included a workshop on regulation of the pharmaceutical sector, a plan to improve drug supply in the public sector and the establishment of a national drug information centre.

A key activity was a national workshop on rational drug use in October 1994. Twenty-two participants (mainly faculty members from Skopje) joined a group of teachers from the Newcastle Centre. General principles of drug registration, safety and efficacy testing, pharmaco-economics, therapeutic response and rational use were covered in the programme of lectures. Interpreters were needed and communication was sometimes difficult. With hindsight we realised that we should have prepared overheads in the local language, although it is not easy to discover software firms selling Macedonian for Windows!

The afternoon workshops were more interactive. The Newcastle team used a teaching model for general practice that had proved successful in the University. Four pharmacotherapeutic groups were chosen: antimicrobial agents, analgesics/NSAIDs, antihypertensive and anti-anginal drugs, and antipsychotics. Participants were divided, according to interests and knowledge, into four focus groups, each chaired by a representative of the group. Each group was assisted (in a deliberately passive manner) by a member of the WHO group. A list of drugs available in the country was provided by the Ministry of Health. Some months before the meeting...