

## COMPARISON OF TWO COMMERCIAL MEINICKE ANTIGENS

### Report on the Use of Three Different Qualities of Saline in the Preparation of Each Antigen for Serological Testing

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Serological results published by J. Kvittingen<sup>1</sup> have demonstrated the important difference in reactivity which exists in Meinicke antigens produced by different firms. The experiments described in this paper were carried out as a study of the mechanism of this difference.

#### Preparation for Tests

Two hundred and sixty-five samples of sera, all fresh and in good condition, were selected for testing. Except for a few at the beginning of the survey, selection of samples was confined to those which had reacted negatively to routine examination with the slide modification of the Meinicke test (MKIR). Swedish "Astra" antigen, batch no. 14, and French "Meditec" antigen, batch no. 5065, were used for the tests. The three different salines used—3.5% solutions prepared with triple-distilled water—were stored in bottles with bakelite screw-top caps, fitted with ordinary cork washers. The three bottles, labelled nos. I, II, and III respectively, were cleaned in the following ways :

No. I : Bottle and cork were boiled in tap-water containing "Dreft" (a detergent), were washed thoroughly and reboiled in tap-water, and were finally washed thoroughly with distilled water and dried.

No. II : Bottle and cork were simply shaken with distilled water and then dried.

No. III : Bottle and cork were soaked in distilled water for 24 hours and were then washed well with distilled water and dried.

On 31 January 1951 each bottle was filled with the 3.5% saline and stored, cap downwards, in a refrigerator, so that the saline was in contact with the cork washer inside the screw cap. Comparative testing began on 4 May 1951.

<sup>1</sup> See page 481 in this number of the *Bulletin*.

### Testing Procedure

The antigen mixtures were prepared simultaneously with the different salines, and each sample of serum was tested simultaneously with all the antigen mixtures. The technique employed was the MKIR slide-test. Control testing of all except the first 80 samples was carried out concurrently with both Astra and Meditec antigens prepared with the saline used in routine testing (saline stored in glass-stoppered bottles). In all, the following eight different antigen mixtures were used :

	A	—	Astra	antigen	mixed	with	saline	used	in	routine	testing									
I	A	—	„	„	„	„	„	„	„	„	from	bottle	no.	I						
II	A	—	„	„	„	„	„	„	„	„	„	„	bottle	no.	II					
III	A	—	„	„	„	„	„	„	„	„	„	„	„	bottle	no.	III				
	M	—	Meditec	antigen	mixed	with	saline	used	in	routine	testing									
I	M	—	„	„	„	„	„	„	„	„	„	„	„	„	„	from	bottle	no.	I	
II	M	—	„	„	„	„	„	„	„	„	„	„	„	„	„	„	bottle	no.	II	
III	M	—	„	„	„	„	„	„	„	„	„	„	„	„	„	„	„	bottle	no.	III

**TABLE I. COMPARATIVE TESTING OF 124 IDENTICAL SAMPLES OF SERA WITH ASTRA AND MEDITEC MEINICKE ANTIGENS PREPARED WITH DIFFERENT SALINES**

Antigen mixtures	Number of samples examined	Reactions				
		negative	positive			%
			degree of positivity *			
			P	WP	DF	
A	124	118	2	3	1	4.8
M	124	74	19	21	10	40.3
I A	124	115	3	3	3	7.3
I M	124	71	16	26	11	42.7
II A	124	115	4	3	2	7.3
II M	124	86	17	10	11	30.6
III A	124	113	3	3	5	8.9
III M	124	67	17	21	19	46.0

\* P = positive ; WP = weak positive ; DF = doubtful

### Results

On two occasions the antigen mixture "I M" was precipitated completely in the test-tube within about 3-5 minutes of removal from the water-bath (56°C), whereas the antigen mixture "I A" remained stable; this occurred only when the last quarter of saline in bottle no. I was being used. The other antigen mixtures remained stable.

The Meditec antigen produced a stronger reaction than the Astra antigen in samples which reacted positively to both, gave a reaction of various degrees of positivity in some samples which reacted negatively to antigen mixture "A", and produced a rougher reaction in some samples which reacted negatively to both antigens. Of the samples which reacted negatively to antigen mixture "A" and positively to antigen mixture "M", all except seven had reacted negatively to the VDRL (Venereal Disease Research Laboratory, Chamblee, Ga., USA) slide-test previously performed on them in routine laboratory testing. The seven samples which had not reacted negatively to the VDRL test had given the following reactions: 1 positive, 4 weak positive, and 2 doubtful positive.

Except in the case of the antigen mixture "II M", which gave a significantly lower percentage of positives, the three test salines—particularly no. III—produced a higher percentage of positive results with both Astra and Meditec antigens than did the routine saline.

Results of the tests are given in table I.<sup>2</sup>

### Conclusions

The following conclusions may be drawn:

1. The Meditec Meinicke antigen, which consistently gave a greater number of positive reactions, is more sensitive than the Astra Meinicke antigen.
2. Both Meditec and Astra antigens are more sensitive when prepared with the salines under test than when prepared with routine saline, with the exception of the Meditec antigen mixed with saline from bottle no. II.
3. The Meditec antigen is precipitated by a slight change in the quality of the saline which is insufficient to disturb the stability of the Astra antigen.

### SUMMARY

Two hundred and sixty-five samples of sera were selected for comparative testing with Swedish "Astra" antigen, batch no. 14, and French "Meditec" antigen, batch no. 5065, in demonstration of the

### RÉSUMÉ

La comparaison de deux antigènes, utilisés pour la réaction de Meinicke — l'«Astra» suédois, lot N° 14 et le «Meditec» français, lot N° 5065 — a été effectuée sur 265 échantillons de sérums. Elle a démontré

<sup>2</sup> Further details of the comparative tests may be obtained on application to the Venereal Diseases Section, World Health Organization, Geneva, Switzerland. — Ed.

important difference in reactivity which exists in Meinicke antigens produced by different firms.

The salines for use in the testing—3.5% solutions prepared with triple-distilled water—were stored in three bottles with bakelite screw-top caps, fitted with ordinary cork washers. These bottles, labelled nos. I, II, and III, had previously been cleaned as follows : no. I—with tap-water containing a detergent, followed by distilled water; no. II—by shaking with distilled water; and no. III—by immersion in distilled water for 24 hours. From 31 January 1951 until 4 May 1951, when the comparative testing was begun, the bottles were stored, cap downwards, in a refrigerator. Eight antigen mixtures were prepared in the following way : each antigen was mixed with the three different salines, and, for control testing, with the saline used in routine tests (saline stored in glass-stoppered bottles). Each sample of serum was tested simultaneously with all the antigen mixtures.

The Meditec antigen proved to be more sensitive than the Astra antigen, producing a larger number of positive reactions, stronger reactions in samples which reacted positively to both antigens, and rougher reactions in samples which reacted negatively to both antigens. Both antigens were more sensitive when prepared with the three test salines than when prepared with the routine saline, with the exception of the Meditec antigen mixed with saline from bottle no. II. A slight change in the quality of the saline was sufficient to precipitate the Meditec antigen but did not disturb the stability of the Astra antigen.

les différences de réactivité que présentent des antigènes de Meinicke de diverses provenances.

Les solutés salins utilisés pour les épreuves — solutions à 3,5% dans l'eau trois fois distillée — furent conservés dans trois flacons, munis de bouchons à vis, en bakélite, pourvus d'une rondelle de liège ordinaire. Ces flacons, I, II, III, avaient été préalablement nettoyés de la manière suivante : le N° I au moyen d'eau de robinet, à laquelle on avait ajouté un détergent, le rinçage étant effectué à l'eau distillée; le N° II par agitation d'eau distillée; le N° III par immersion dans l'eau distillée pendant 24 heures. Du 31 janvier 1951 au 4 mai 1951, date à laquelle les épreuves comparatives débutèrent, les flacons furent conservés, inversés, dans un réfrigérateur. Huit mélanges antigéniques furent préparés comme suit : chaque antigène fut mélangé avec les trois solutés salins et, aux fins de contrôle, avec le soluté utilisé pour les épreuves courantes (soluté conservé dans un flacon bouché à l'émeri). Chaque échantillon de sérum fut soumis à l'épreuve simultanée de tous les mélanges antigéniques.

L'antigène Meditec se révéla plus sensible que l'Astra, donnant un nombre plus élevé de réactions positives, des réactions plus fortes avec les échantillons réagissant positivement aux deux antigènes, et accusant moins nettement la séronégativité des échantillons ne réagissant avec aucun des deux antigènes. Les deux antigènes préparés avec les trois solutés salins précédemment décrits présentèrent une plus grande sensibilité que ceux qui avaient été préparés avec le soluté courant, à l'exception du Meditec mélangé au soluté II. Une légère modification de la qualité des solutés salins a suffi pour provoquer la précipitation de l'antigène Meditec, tandis que l'Astra conservait sa stabilité.