



REPORT OF INFORMAL MEETING OF WHO WORKING GROUPS ON SALMONELLOSIS
(IMMUNIZATION IN ANIMALS)

Orvieto, Italy, 8 April 1990

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INTRODUCTION

Dr K. Bögel welcomed the participants (see Annex 1) and opened the meeting on behalf of Dr H. Nakajima, Director-General of the World Health Organization. The heads of the WHO working groups met to review their activities since the meeting in Jena in March 1989 (WHO/CDS/VPH/89.81), and to plan further collaborative studies. Plans were also made for the next scientific meeting on salmonellosis control in agriculture, to take place in Jena in June 1991. Professor H. Meyer was elected Chairman, and Dr C. Wray served as Rapporteur.

1. Salmonella virulence and basic mechanisms of immunity (Report by working group 1)

Using transposon-insertion mutagenesis, two genetic regions for serum resistance and mouse lethality had been identified in an 80 kb virulence plasmid of *S. dublin*. The plasmid gene for serum resistance was found to be closely involved with the expression of the neutral sugar composition of the lipopolysaccharide associated with *S. dublin*. A strain of *S. dublin*, with both serum resistance and mouse lethality genes inactivated by transposon mutagenesis that shows reduced virulence, may be an appropriate live vaccine strain.

Epidemiological investigations on pathogenicity factors in *Salmonella* had been undertaken and mannose-resistant fimbriae had been detected in 10% and 20% of strains isolated from swine and cattle respectively.

Future work would continue on the development of a virulent strain of *Salmonella* for evaluation of vaccines. These mutants would also assist studies on the virulence of *Salmonella*. It was also proposed that additional experts in this field be invited to the scientific meeting in Jena in 1991.

2. Improved serological diagnostic tests (Report by working group 2)

The enzyme-linked immunosorbent assay (ELISA), developed at Davis, USA, for the serological diagnosis of *S. dublin* in dairy cattle, has been found to be more appropriate for the detection of 'latent' carriers than diagnosis by bacterial culture. The test can also be used for milk samples and automation will allow the rapid analysis of many samples. It was proposed that the ELISA be evaluated in the German Democratic Republic (GDR). Professors Meyer and Smith will produce protocols and plan investigation of serum samples from large (> 2000 head of animals) vaccinated and non-vaccinated herds believed to be salmonella-free for the presence of latent carriers. The necessary equipment will be furnished by WHO.

Professor Smith, Davis, USA, and his research associate will visit Jena to oversee the test evaluation and Professor Meyer will also organize, with WHO, a training course. In late 1990 a research associate from Davis will visit Jena to set up equipment and to instruct technicians. In June 1991, Professor Smith will go to Jena to instruct in a course on ELISA methodology. Professor Meyer and his assistants will also participate in the course. WHO will assist in funding travel costs for participants in the course.

In the United Kingdom, ELISA tests are being developed for the serological diagnosis of *S. enteritidis* infection in poultry. ELISA tests are also being developed for the detection of antibody in egg yolk and it is hoped that this test could be used to detect infected flocks.

3. Salmonella vaccines (Report by working group 3)

Professor Meyer reported the results of his studies with a live oral auxotrophic vaccine for the control of salmonellosis in poultry. These results had been encouraging and in one district its use in all young laying birds was associated with a corresponding decrease of human infection. It is currently mandatory to immunize all young laying birds in the GDR.

Work would continue on immunization schedules in laying birds and in broilers; in the latter, passive immunity could be used by vaccination of breeder hens. In the United Kingdom a number of groups are investigating the use of vaccines to control *S. enteritidis* infection, and at the Central Veterinary Laboratory both killed and live vaccines are being evaluated.

4. Information exchange

A summary of the work of the groups and pertinent references had been circulated. It was agreed that such a review should be produced annually, by Dr Wray, and that group members would submit enough copies for circulation.

5. Discussions

The group leaders also considered that surveillance and epidemiological data were needed to actively monitor control programmes. It was regretted that historic and presently established regulations in some countries are counter-productive in that the detection of *Salmonella* infection may trigger off a sequence of actions which mitigates the conscientious collaboration of the producer. In order to promote *Salmonella* control it appears essential :

- i) to produce regulations to ensure the collaboration of the farmer and reward him for *Salmonella* control;
- ii) to establish practices which favour *Salmonella* control along the whole food chain, which would include worker training and education programmes.

Immunization programmes offer one of the means to attain actual targets without impairing farming practices and productivity. However, these require national control programmes and the institution of epidemiological surveillance systems. National committees should examine the present legislation and suggest appropriate changes and innovations.

6. Conclusions

The working groups should continue their collaboration in line with the points in this report. The next meeting of group leaders is proposed for Jena, GDR, in June 1991.

LIST OF PARTICIPANTS

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LIST OF WORKING PAPERS

1. Report of WHO Working group on Salmonella immunization in animals (by H. Meyer, Jena, German Democratic Republic).
2. Report of Working group on virulence of Salmonella, 1989/90 (by N. Terakado, Ibaraki, Japan).
3. Detection of chronic enteric S. dublin infection in cattle using ELISA (by B.P. Smith, Davis, USA).

