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INFORMATION

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STUDIES ON *SALMONELLA PULLORUM* PHAGE*

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The present experiments were carried out to study whether or not bacteriophage is available in typing or identification of *Salmonella pullorum*. The results of the experiments are as follows.

1. A total of 155 phages were obtained from chicken feces, livers of pullorum-diseased chickens, and *S. pullorum*, using strains of standard (S), variant (V) and intermediate (I) types of the organism as propagating and indicator strains. The phages were classified into four major groups: i. e., group I derived from feces, groups II and III from *S. pullorum* cultures and group IV from livers of the infected chickens. These phages were, moreover, subdivided into 10 types.

2. Lytic action of the groups II and III phages was specific for the serological subtypes of *S. pullorum*. It became, therefore, possible to identify the serological subtypes of *S. pullorum* by means of lytic action of the phages mentioned above.

3. Out of the 137 strains of *S. pullorum* examined, 127 (92.7%) were found to be essentially lysogenic. S and V strains were non-lysogenic, while almost all I strains were lysogenic.

4. Intermediate strains, which have been detected most frequently in Japan, were divided into 9 types based on the sort of liberating phage and phage susceptibility, and the typing by phage was considered to be sufficiently useful for the epizootiological investigations of pullorum disease.

5. The phage receptors of *S. pullorum* for the groups II and III phages are polysaccharides which are synthesized in susceptible strains. Cultures of S, V and I had the same components of monosaccharide.

6. According to the fact that V strains were lysogenized by the groups II and III phages, it became clear that the antigens of some strains of V type varied from $12_2 + + 12_3 \pm$ to $12_2 + + 12_3 + +$.

* Original report of this work will appear serially in "Japanese Journal of Veterinary Science" in the near future.

It is concluded that the phage of *S. pullorum*, as well as those of several other bacteria, may be sufficiently available to the studies on typing of *S. pullorum* and epizootiological investigation of pullorum disease.

STUDIES OF *ESCHERICHIA COLI* ISOLATED FROM CHICKENS, SEROLOGICAL TYPES AND SENSITIVITY TO ANTIBIOTICS

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(Summary of Master's thesis written under
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Two hundred and seventy strains of *Escherichia coli* were isolated from the internal organs (heart, liver, spleen, kidneys, and lungs) of 1198 chickens; 217 from the unabsorbed yolk of the same chickens; and 185 from the droppings of 153 normal day old chickens. Although a few internal organs and unabsorbed yolks were taken from birds about 8 weeks of age; the majority were taken from normal day old chickens. The results of the present experiments may be summarized as follows:

1. Using 42 types of anti *E. coli* O serums (39 known and 3 unknown), 71.5% strains isolated from the internal organs, 79.3% from the yolk, and 74.6% from the feces were typable.
2. There were 25 different O groups of *E. coli* isolated from the internal organs, 22 from unabsorbed yolks, and 17 from droppings.
3. Of 672 strains studied, about 60% belonged to one of the following O groups; O 60 (20.7%), 8-18 (10.3%), Y 813 (9.2%), O 53 (6.7%), O 1 (5.1%), O 2 (2.7%), O 21 (2.4%), and N 128 (2.1%). Serotype O 78, which is common in poultry respiratory diseases in England, was not found in the present studies.
4. Five strains of O 28 ac were isolated from the unabsorbed yolks and 2 strains from the internal organs. The yolks yielded 2 strains of O 125 and the internal organs 2 of the same type.
5. From 24 chickens yielding *E. coli* from all tissues examined (heart, liver, spleen, kidney, lung and unabsorbed yolk), 22 yielded strains which were typed within one or two O groups.
6. Of the 672 strains tested for sensitivity to antibiotics in vitro, all were sensitive to chloramphenicol, 92% to streptomycin, and 67% to tetracycline. In general, the *E. coli* recovered from the internal organs were more resistant to streptomycin and tetracycline than those isolated from the droppings.