SOME SEROLOGICAL STUDIES ON AVIAN VIBRIO

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Micro-aerophilic cultivation was conducted to detect avian vibrio (A. vibrio) from 500 chickens of various days old submitted from several poultry farms in Hokkaido, and 50 cultures were isolated from the gall bladders and/or livers of the chickens. The biochemical properties of these isolates were closely similar to those of other related animal vibrios, *Vibrio fetus* and *Vibrio coli*. Rabbit immune serums were prepared with formalized cells of 8 strains of A. vibrio and two strains of two biotypes each of *V. fetus* and *V.* coli. The cross agglutination test, agar-gel precipitation test and indirect fluorescent antibody technique were used to investigate their serological relationships.

The results of the present experiments are summarized as follows:

1) From the results of the acid agglutination test with a lactate buffer, 31 strains of A. vibrio were divided into three different groups. That is, type I (14 strains) showed a heavy agglutination at pH 4.2, a transparent and occasional appearance of swarming colonies, and instability in neutral phosphate buffered saline (PBS) suspension. There is every indication that formalized cell antigens of this type are agglutinated by all the antiserums employed. However, heated cells of this type were hardly agglutinated with the serums. Type II (10 strains) manifested an agglutination at pH 2.3, and formed a raised, opaque, occasionally metalic-coloured colonies and stable cell suspension in the PBS. The heated antigen showed better reactivity to all the antiserums, though strain specificity was observed in the agglutination test with the formalized cell antigens of this group. Six strains of type III were characterized by their agglutinating properties at both the pH above mentioned. The colonies assumed an intermediate appearance between those of types I and II, and formed a stable suspension in the PBS. The agglutination pattern of both the formalized and heated cells of this group were closely similar to each other.

2) Although the variable agglutination titers were observed in cross agglutination tests with formalized and heated cells, the existence of both heat labile and stable common antigens in these A. vibrios was suggested. In addition, there seemed to exist a heat labile common antigen among vibrios derived from different animal species; A. vibrio (type I), *V. fetus* and *V. coli*. Furthermore, by means of the agar-gel precipitation test with sodium desoxycholate extracted antigen and the indirect fluorescent antibody technique, common antigens were confirmed

among almost all the vibrios used in this study, particularly among these three types of A. vibrio.

THE LEUKOCYTES OF OVINE PERIPHERAL BLOOD IN ELECTRON MICROSCOPY

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The fine structures of the leukocytes of the peripheral blood obtained from 5 clinically normal adult sheep were observed by the use of an electron microscope.

1) The leukocytes observed under the microscope were classified into six cell types such as neutrophils, eosinophils, basophils, lymphocytes, monocytes and plasmacytoid cells.

2) On the basis of their electron density, the specific granules of neutrophils were classified into two types.

3) The basic type of the specific granules of eosinophils was the granule with a middle plate. In addition, the homogeneous granules without any structures, the granules with myelin-like structures, the ones with small fine network-like structures, the ones with homogeneous dense round substances, and the granules with a mixtures of some of the structures described above were observed.

4) The specific granules of basophils were divided into 3 types.

5) Most of the lymphocytes were typical in their fine structures, but in some of them moderately- or well-developed rough-surfaced endoplasmic reticulum were observed.

6) Monocytes were characterized by the band or horse shoelike nuclei or those irregular in form, the presence of well-developed endoplasmic reticulum and a number of mitochondria in the cytoplasm.

7) The mononuclear cells with well-developed rough-surfaced endoplasmic reticulum enlarged irregularly like sacs in the greater parts of the cytoplasm were classified as plasmacytoid cells.