



# HOKKAIDO UNIVERSITY

Title	HEMAGGLUTININS, LEUKOCYTOSIS-PROMOTING AND HISTAMINE-SENSITIZING FACTOR (S) OF BORDETELLA PERTUSSIS
Author(s)	ARAI, Hideo
Citation	Japanese Journal of Veterinary Research, 26(1-2), 20-21
Issue Date	1978-04
Doc URL	<a href="https://hdl.handle.net/2115/2126">https://hdl.handle.net/2115/2126</a>
Type	departmental bulletin paper
File Information	KJ00003407840.pdf



**STUDIES ON PERINATAL IMMUNITY IN PIGLET**

Terutake YABIKI

*Central Institute for Feed and Livestock,  
National Federation of Agricultural Cooperative  
Associations (known as Zenno), Tsukuba  
Machi, Ibaraki 300-33, Japan.*

Original reports of this thesis appeared in "Japanese Journal of Veterinary Science" Vol. 35, 199~208 (1973) (in English with Japanese summary), "American Journal of Veterinary Research", Vol. 35, 1483~1489 (1974), and *Ibid.*, Vol. 37, 535~540 (1976).

Hokkaido University granted the degree of Doctor of Veterinary Medicine to the following 3 researchers on 25 March, 1978 under a new regulation (1962) authorizing the granting of the Doctor's degree to qualified researchers who were not graduates of the Graduate School of Veterinary Medicine.

The titles of their theses and other information are as follows :

**HEMAGGLUTININS, LEUKOCYTOSIS-PROMOTING  
AND HISTAMINE-SENSITIZING FACTOR(S)  
OF *BORDETELLA PERTUSSIS***

Hideo ARAI

*1st Department of Bacteriology National  
Institute of Health, Komiosaki,  
Shinagawa-ku, Tokyo 141, Japan*

A preparation of leukocytosis-promoting factor was obtained from the supernatant fluid of spent cultures of *Bordetella pertussis* on solid or liquid medium. Purification was carried out by sequential processes of ammonium sulfate precipitation, extraction with a 1 M NaCl solution, starch block electrophoresis and sucrose density gradient centrifugation. The purified preparation (O-LPF) possessed leukocytosis-promoting (23,500 units per mg of protein), histamine-sensitizing (36,200 units per mg of protein) and hemagglutinating (34,500 units per mg of protein) activities, but neither endotoxic nor dermonecrotic activity was found. The O-LPF contained two hemagglutinins which were different in susceptibilities

to papain or subtilisin and separable from each other by agarose gel filtration with Tris-HCl buffer containing 1 M NaCl. One hemagglutinin had a high hemagglutinating activity (53,000 units per mg of protein), but neither leukocytosis-promoting nor histamine-sensitizing activity was found. This hemagglutinin was named as HA. The other hemagglutinin possessed a low hemagglutinating activity (7,000 units per mg of protein), but it showed high leukocytosis-promoting (40,000 units per mg of protein) and histamine-sensitizing (57,400 units per mg of protein) activities. This hemagglutinin was referred to as LPF. HA and LPF were antigenically distinct in double immunodiffusion tests. Morphologically, HA showed to be filamentous particles of about  $2 \times 40$  nm, while LPF was comprised of apherical particles of about 6 nm in diameter. The molecular weight values of HA and LPF estimated by polyacrylamide gel electrophoresis and density gradient centrifugation were about 130,000 and 110,000, respectively. Electrophoresis of LPF in polyacrylamide gel at pH 4.5 gave a single band. Moreover, leukocytosis-promoting, histamine-sensitizing and hemagglutinating activities were shown in the section corresponding to this band. It seemed that these activities were elicited by a single LPF molecule.

**CHARACTERIZATION STUDIES ON A PARAMYXOVIRUS  
ISOLATED FROM JAPANESE SPARROW-HAWKS  
(*ACCIPITER VIRGATUS GULARIS*)**

Jesus Arias IBARRONDO  
*Department of Epizootiology  
Faculty of Veterinary Medicine  
Hokkaido University, Sapporo 060, Japan*

Original report of this thesis will appear in "Japanese Journal of Veterinary Science" (1978) (in press).