



# HOKKAIDO UNIVERSITY

Title	THE EFFECT OF THE EXPERIMENTAL VISCERAL PAIN ON SPONTANEOUS DISCHARGES FROM THE EFFERENT FIBERS IN THE RESPIRATORY NERVE
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great splanchnic nerves→stomach.

4) The reflex inhibitory responses of the stomach to an afferent fiber in the left great splanchnic nerve stimulation, were mainly initiated by the following reflex arcs, that is; (a) left great splanchnic nerve→spinal cord→small and right great splanchnic nerves→stomach and (b) left great splanchnic nerve→spinal cord→brain stem→dorsal and ventral vagal nerve trunks→stomach.

5) The mechanisms and the physiological importance of these reflex inhibitory responses of the stomach were discussed.

### **THE EFFECT OF THE EXPERIMENTAL VISCERAL PAIN ON SPONTANEOUS DISCHARGES FROM THE EFFERENT FIBERS IN THE RESPIRATORY NERVE**

Ichiji SUMITOMO

*Department of Pharmacology  
Faculty of Veterinary Medicine  
Hokkaido University, Sapporo, Japan*

(Summary of Masters thesis written under direction of Dr. A. OHGA)

In the first part of this experiment the correlation between the patterns of spontaneous discharges from the efferent fibers of the phrenic, recurrent and intercostal nerves, and the volume of respiration was examined. Then the effects of visceral and somatic stimuli on spontaneous discharges from these respiratory nerves were examined at a certain volume of respiration.

Electrical stimulation of the central end of a splanchnic nerve, distention of a limited portion of the small intestine and injection of bradykinin into a mesenteric artery were used as visceral stimuli, and electrical stimulation of a sciatic nerve as a somatic stimulus.

1) The alternation of the discharge pattern of each respiratory nerve was corresponding to the volume of respiration.

2) The discharges from the phrenic, recurrent and internal intercostal nerves in intact dogs were inhibited for a while and then accelerated by each of the visceral stimuli.

In decerebrated dogs, this inhibition became clearer, while the later acceleration failed to take place. The discharges of an external intercostal nerve were accelerated in both intact and decerebrated dogs.

3) The discharges from the phrenic and recurrent nerves in intact dogs were always accelerated, but after decerebration this acceleration did not occur by the somatic stimulus.

4) The possibility that visceral pain produced by visceral stimuli in this experiment may account for the inhibitory and excitatory effects. The mechanism through which these effects are mediated are discussed.

### **STUDIES ON *ESCHERICHIA COLI* ISOLATED FROM DISEASED CHICKENS, SPECIAL REFERENCE TO O GROUP OF THE ISOLATES**

Koichi TAKAHASHI

*Department of Epizootiology  
Faculty of Veterinary Medicine  
Hokkaido University, Sapporo, Japan*

(Summary of Masters thesis written under direction of Dr. S. MIURA)

Two hundred and fifty-one strains of *Escherichia coli* were isolated from visceral organs (heart, liver, spleen, kidney, lungs), trachea, airsacs, and other organs of 89 out of 242 (220 removed and 22 dead) diseased chickens of T farm on Hokkaido from April 1964 to March 1965.

The strains of *E. coli* were investigated based on their serological types, especially their O groups, and on their sensitivity to some antibiotics. In addition, O titrations of 156 serum samples from 220 culled chickens were undertaken via the tube test with antigen of O groups 1, 2, 8, and 78 which are known as the most popular O groups in chickens.

The results of the experiments may be summarized as follows:

1) Using 45 types of *E. coli* O antisera (43 known and 2 unknown—O1, -2, -3, -4, -5, -6, -8, -11, -15, -16, -18, -21, -22, -25, -26, -28 ac, -44, -53, -54, -55, -60, -69, -71, -73, -75, -78, -83, -86, -88, -109, -111, -112 ac, -113, -115, -125, -126, -131, -137, -138, -139, -140, -141, -144, 8-18, and Y 813), 147 (58.7%) of the 251 strains were typed into 17 O groups.

2) Of the 147 strains typed, 54 belonged to O group 2, 26 to O 78, 21 to O 8, 19 to O 1, 9 to O group 8-18, 3 each of O groups 109 and 140, 2 each of O groups 53 and 88, and the remaining to O groups 21, 25, 26, 54, 73, 131, 139, and Y 813.

3) Of the 251 strains tested for sensitivity to antibiotics in vitro, 64 (25.5%) were resistant to tetracycline, 1 (0.4%) to streptomycin, and 12 (4.8%) to both tetracycline and streptomycin, but all were sensitive to chloramphenicol.

4) Thirty-nine of 156 serum samples were positive in a titer of 1:5 or more for *E. coli* O group 1, 40 for O 2, 7 for each of O 8 and O 78. The maximum titer was 1:80 or more to O 1 (3 samples) and O 78 (1 sample), and 1:40 to O 2 and O 8 (each 1 sample).