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HUMORAL IMMUNITY TO THE ENCAPSULATED STRAIN OF *STAPHYLOCOCCUS AUREUS*

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Hokkaido University granted the degree of Doctor of Veterinary Medicine to the following 2 graduates of the Graduate School of Veterinary Medicine on 25 March, 1978.

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

THE CHANGES IN RNA SYNTHESIZED FROM IRRADIATED CALF THYMUS TEMPLATES

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The effect of ionizing radiation on calf thymus deoxyribonucleoprotein (DNP) which served as a template for RNA synthesis in vitro was investigated. And also, the translational ability of RNA which was transcribed from irradiated calf thymus DNA or DNP in vitro was investigated. The template activity irradiated DNA for RNA synthesis markedly decreased with increasing doses. On the other hand, the template activity of DNP increased with irradiation at a dose lower than 20 krads and then decreased with higher doses.

A formation of cross-linkings in DNP between histone and histone was found following irradiation. The cross-linkings in DNP must have been formed by the intramolecular reaction of radicals produced in the protein moiety due to irradiation.

Newly synthesized RNA in vitro from DNA or DNP directed the protein

synthesis in cell-free system extracted from *Escherichia coli*. In this coupled system, protein synthesis did not depend on *E. coli* mRNA synthesized in vivo, but depended on both calf thymus templates and RNA polymerase. To detect the changes of amino acid composition of proteins directed by RNA from irradiated templates, three ^{3}H-labelled amino acids were incorporated into proteins in this coupled system.

In the case of irradiated DNA as a template, the incorporation of leucine into proteins decreased similarly in template activity with increasing doses. However, the incorporation of glycine or lysine decreased less with each dose than did the template activity. The proteins coded by RNA from unirradiated DNP had a considerably higher ratio of lysine to leucine than the proteins coded by RNA from unirradiated DNA. In the case of irradiated DNP as a template, the incorporation of leucine was considerably enhanced but the incorporation of lysine was not so appreciably enhanced. Thus, the ratio of lysine to leucine in the proteins directed by irradiated DNP appeared to come close to the ratio of lysine to leucine in the proteins directed by unirradiated DNA.

STIMULUS-SECRETION COUPLING OF THE CELL IN THE ADRENAL MEDULLA

— STUDIES ON ISOLATED AND PERFUSED ADRENAL GLANDS OF THE RAT —

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