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# EFFECT OF ENDOTOXIN ISOLATED FROM HEMOLYTIC *ESCHERICHIA COLI* (O-139) ON THE FIBRINOLYTIC SYSTEM OF RABBIT PLASMA

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(Summary of Master's thesis written under direction of Dr. T. HAGA)

It was demonstrated by means of the fibrin plate method that enhanced fibrinolytic activity occurred in the plasma of almost all the rabbits, 1~3 hours following injection of endotoxin isolated from hemolytic *E. coli* (O-139).

It was also possible to observe significantly increased levels of plasminogen activator in the plasma following shock symptoms in the rabbits.

In addition, a considerable amount of inhibitor of the tissue activator isolated from rabbit kidneys was observed in the plasma following the appearance of fibrinolytic activity.

The plasma levels of anti-plasmin and anti-trypsin remained unchanged following injection of the endotoxin.

# STUDIES OF STAPHYLOCOCCI IN DAIRY HERDS AND EVALUATION OF SOME DIAGNOSTIC METHODS FOR MASTITIS

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(Summary of the Master's thesis written under direction of Dr. K. HIRATO)

Milk samples from dairy herds in Hokkaido were examined using the California Mastitis, BTB and Hotis Tests, with due consideration for the number of leucocytes and bacteria in milk. Staphylococci were collected from milk samples, teats, udder surfaces and other parts as well as the stalls, teat cups of milking machines and dairy-men's hands. These strains were identified both biochemically and by phage typing. The results may be summarized as follows:

1. The percentage of high cell count milk (more than 500,000 cells per ml.), increased in proportion to the number of bacteria in milk.

2. No particular species of streptococci was isolated from the high cell count milk.

3. Sixty-seven strains of coagulase positive staphylococci were isolated from milk samples, 46 of them from high cell count milk.

4. Bacteriophage typing showed 62.5% of the 86 strains to be typable with phages of the international series and 67.5% with phages of NAKAGAWA's set. The strains isolated in Yakumo, Shizunai, and Obihiro were phagetyped primarily as group III with phages of international series, and A 1 and A 2 with NAKAGAWA's set, on the other hand, strains isolated from a herd in Sapporo were typed as group IV and A 1+A 2 respectively.

5. Of the total number of staphylococci strains isolated, 10 strains were resistant to 2 units of penicillin and 4 strains were resistant to 10 $\mu$g streptomycin with the filter paper disk method.

6. The majority of the staphylococci produced beta lysin in combination with other lysins.

# PURIFICATION AND PROPERTIES OF A HEMOLYSIN PRODUCED BY HEMOLYTIC *ESCHERICHIA COLI* (O-139)

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Attempts were made to purify and characterize a hemolysin produced by *E. coli* (O-139), which had been isolated from intestinal contents of a pig suffering from edema disease.

The original material used was culture filtrates of the organisms, which had been cultivated in acid-extract broth supplemented with 1 % peptone and 0.5% glucose.

The hemolysin was purified by adsorption and elution from calcium phosphate gel, fractionation with ammonium sulfate, and treatment with lead sub-acetate, followed by gel filtration with Sephadex G 50. The specific activity of the purified hemolysin increased by a factor of 1,300, with a 36% yield for activity.

The purified hemolysin was highly homogeneous electrophoretically and ultra-