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## Production of Fibrinolysin *In Vivo.*

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It was recently reported[1] that the fibrinolysin of hemolytic streptococci may be found *in vivo*. The fibrinolytic agent could be demonstrated in the spinal fluid of patients with purulent meningitis due to *streptococcus hemolyticus*. Subsequently, purulent exudates from various sources have been examined for fibrinolytic potency. The exudates were centrifuged immediately and the supernatant fluids were tested according to the technic of Tillett and Garner.[2]

Of 5 spinal fluids from patients with hemolytic streptococcal meningitis, 4 contained fibrinolysin; the fifth did not, in spite of the fact that the isolated strain produced fibrinolysin *in vitro*. Of 6 patients with pneumococcal meningitis, only one, due to pneumococcus type XIV, displayed fibrinolytic activity. The spinal fluids of 5 patients with meningococcal meningitis, and of a patient with tuberculous meningitis (proven bacteriologically), did not contain any fibrinolysin; nor did the spinal fluids of 4 patients with a clinical diagnosis of encephalitis.

Exudates from patients with purulent pericarditis, pleuritis and peritonitis also have been examined for fibrinolytic activity. The fibrinolysin was demonstrated in the peritoneal exudate of a patient with hemolytic streptococcal peritonitis and in the pleural fluid of another patient with $\beta$-streptococcal empyema. Fibrinolysin was also found in the exudates of 2 patients with pericarditis and peritonitis, respectively due to *Staphylococcus aureus hemolyticus*, the organism was present in the blood stream of both patients.

In order to determine whether fibrinolysin is produced in experimental animal diseases, various strains of pneumococci and hemolytic streptococci, suspended in saline, were intraäbdominally injected into white mice. The injected material was not fibrinolytic. Shortly after death of the mice, which usually occurred between 12 and 48 hours after the injection, the abdominal cavity was washed with about 10 cc. of normal saline; the specimens obtained were centrifuged and the supernatant fluid tested for fibrinolytic activity. Fibrinolysin was present in the washings from mice which had suc-

1 Neter, E., and Witebsky, E., *J. Bact.*, 1936, **31**, 77.

2 Tillett, W. S., and Garner, R. L., *J. Exp. Med.*, 1933, **58**, 485.

cumbed to hemolytic streptococcal infection. The fibrinolysin from washings dissolved clotted plasma; it was effective in high dilutions on human, but not rabbit or guinea pig plasmas; it was heat-labile, and could be neutralized by specific streptococcal antisera. The washings also contained hemolysin in high titer. Further experiments are necessary to determine whether the abdominal washings from mice infected with microörganisms other than hemolytic streptococci may contain fibrinolysin. Thus far, the washings from mice killed by various types of pneumococci did not display any fibrinolytic activity.

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## Toxic Effect of Various Concentrations of Bile on Dog's Gall Bladder.*

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Experimental increase in gall bladder bile of one or several bile salts causes a reaction on the gall bladder wall. This increase can be produced in different ways: 1. By the addition of bile salts to whole gall bladder bile. 2. By concentrating the dog's own bile in the gall bladder. 3. By replacing the gall bladder bile with bile from another animal, concentrated previous to the introduction.

The first method has been applied in an experimental study,[1, 2] revealing the high toxicity of desoxycholic acid as compared with the weaker action of other bile salts.

Attempts have been made by us to concentrate gall bladder bile experimentally without removal from the gall bladder, thus producing changes in the gall bladder wall by means of the animal's own bile. These attempts, however, have met with great difficulties. Since all of the water-absorbing chemicals cause severe damage to the gall bladder wall, we tried to accomplish this concentration by washing the gall bladder bile with dry warm air for a certain length of time. This procedure resulted in some instances in an increase in the solid substances of bile, accompanied by a slight reaction on

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1 Aronsohn, H. G. and Andrews, E., PROC. SOC. EXP. BIOL. AND MED., 1935, **33**, 87.

2 Andrews, E., and Aronsohn, H. G., *loc. cit.*