

Freezing the whole adrenal glands for 5 months prior to extraction has no effect upon the yield of hormone. A very good yield of hormone was obtained from glands which had autolyzed for 48 hours at room temperature. Extracts preserved with 0.1% benzoic acid at 5°C. retained their activity for 6 months. Longer periods have not been studied. The stability of the finished extract has been checked in two ways (1) adrenalectomized dogs have been kept on a single batch of extract for periods of 3 to 5 months. On withdrawing extract they have come promptly into insufficiency. (2) Assayed extract has been set aside for 6 months and re-assayed without showing any loss in potency.

## 6187

**"Autosterilization" as a Problem in the Bacteriological Examination of Canned Foods.**

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During investigations in which large numbers of cans of food spoiled by thermophilic bacteria were opened, many cans with evidences of spoilage contained no living bacteria even though examination of stained films revealed the presence of many cells. This seemed to indicate that the microorganisms responsible for the spoilage had probably died out. To secure more information on this situation which has become known as "autosterilization", the problem was attacked with canned corn and several spoilage bacteria including an active thermophilic spoilage organism, No. 1518, in both tin and large culture tubes.

Large culture tubes were half-filled with fresh canned corn, layered with paraffin and sterilized in the autoclave. The corn in the tubes was then inoculated with the spoilage organisms and divided into 4 sets. One set was incubated at 10°C.; the second at room temperature (20-37°C.); the third at 37.6°C., and the fourth at 55°C. At intervals of 2 or 3 days a tube from each group was removed, plated for the number of viable organisms, and the pH determined. A relationship between the temperatures at which the tubes were held and the number of living organisms was apparent with all cultures of thermophilic bacteria used. At 55°C. a lethal H ion concentration was reached, much more quickly than at 37°C.

The tubes which were held at 55°C. had an original pH of 6.8 and a bacterial count of 4,000,000 per gm. At the end of 15 days, the count was reduced to 100 per gm. with a pH of 4.8. Further incubation at the same temperature for 4 or more days killed all of the organisms with practically no change in pH. A similar experiment was carried out with No. 2 cans of corn. These cans were proven to be free from viable spoilage organisms before their use. They were then opened aseptically and inoculated with spores of organism No. 1518. Before inoculation, the cans were thoroughly heated in the Arnold and a small opening made, through which the spore suspension was introduced. There were 3,000,000 viable spores per cubic centimeter in the suspension. The cans were then incubated at 55°C., one can being opened each week over a considerable period of time. No viable organisms could be demonstrated in the contents of the cans after 28 days, when the hydrogen ion concentration had reached 4.8. The rest of the cans in the series were then opened and similar results secured. It was found that the reaction of the inoculated incubated corn became acid very rapidly, and reached its maximum at the end of 2 weeks. In another experiment, viable cells were absent after 9 days. The pH was as reported above.

A few experiments with an organism producing putrefactive spoilage of corn did not indicate that autosterilization occurred. The optimum temperature of this organism was 37°C.

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### Penetration of Intestinal Wall of Rabbit by Yeasts.

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Casagrandi<sup>1</sup> early concluded that blastomycetes seldom penetrate the mucous layers of the intestinal wall. Positive results were explained on the basis of existing injuries which escaped detection. Fisher,<sup>2</sup> however, recently found that yeast fed fasting dogs is absorbed like bacteria into the portal circulation. Cells injected into the portal vein also proved that yeasts can invade all the organs, the distribution varying with the amount injected.

<sup>1</sup> Casagrandi, O., *Annali d'Igiene sperimentale*, 8. Reviewed in *Cent. Bakt.*, 1908, 1, Ref. 24, 758.

<sup>2</sup> Fisher, Virginia, *PROC. SOC. EXP. BIOL. AND MED.*, 1931, 28, 948.