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Comparison of certain properties of pancreatic and malt amylase preparations.

By **H. C. SHERMAN** and **M. D. SCHLESINGER.**

[*From the Laboratory of Food Chemistry, Columbia University.*]

The amylase preparations made from pancreas and from malt are similar in many respects but are not identical substances.

Both are essentially protein materials, showing typical reactions in the Millon, xanthoproteic, tryptophan and biuret tests, containing 15 to 16 per cent. of nitrogen, and yielding the different types of amino acids distinguishable by the Van Slyke method in proportions similar to those found in typical proteins by Dr. Van Slyke.

Both the pancreatic and the malt amylase preparations when heated in solution yield coagulated albumin and a proteose or peptone.

These and other observations are in harmony with Osborne's theory of the chemical nature of the enzyme, and not with the findings of Frankel and Hamburg or of Pribram.

Malt amylase is most active in a somewhat acid solution (P_H^+ 4.4 $\pm$ 0.2) whereas the optimum for pancreatic amylase is slightly alkaline.

Among the best preparations obtained in a long series of purification experiments the pancreatic is more than twice as active as the malt amylase. In 30 minutes at 40° the former produced 10,000 times, the latter 4,000 times, its weight of maltose. When allowed to act at the same temperature until no further action could be observed the pancreatic amylase preparation digested 2,000,000 times its weight of starch and produced 1,200,000 times its weight of maltose.

The most highly purified pancreatic amylase preparations show also a pronounced proteolytic action, while the corresponding malt amylase preparations show no proteolytic activity.

The results of the investigation are being published in a series of papers in the *Journal of the American Chemical Society.*