pH 4.0, 300 cc of acetone were added and the precipitate obtained, separated by centrifugation. The precipitate was dissolved in 100 cc of 0.02 M NaCN and then reprecipitated by the addition of another 300 cc of acetone. This last precipitate was washed with acetone and ether and then placed in a vacuum desiccator over $CaCl_2$. The dried precipitate was pulverized in a porcelain mortar until a fine, whitish powder was obtained. The yield of crude enzyme was 5 gm.

The activity of this preparation, when in solution at a pH 5.9, is of 390 milk-clotting units per gm. This enzyme is a typical papainase, as it is reversibly inactivated by H_2O_2 and iodine, and activated by NaCN and cysteine. Like other papainases, this enzyme digests live tissue. *Macracanthorhynchus hirudinaceus* (from hog intestine) were digested by a 1 per cent. solution of our enzyme preparation in less than 12 hours, when incubated at 40° C at pH 5.5. Controls in the same solution, previously boiled, were not digested.

The amount of crude enzyme that can be recovered from maya juice is a little over 17 times the amount of bromelin obtained from the average pineapple juice. Both enzyme preparations have about the same milk-clotting activity, therefore the maya may prove, in the future, to be an important source of a papain-like enzyme.

Having found in the available literature no account of this enzyme, we submit this brief report, which will be followed in due course by a more complete description, and suggest the name "pinguinain" for this new enzyme, as the generic name of the plant source has already been used in naming bromelin, the enzyme obtained from the pineapple.

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PARTICULATE GLYCOGEN*

BY fractional centrifugation of finely dispersed liver suspensions a submicroscopic particle containing glycogen was obtained. This particle has an approximate sedimentation constant of $4{,}000 \times 10^{-13}$. This means a particle size much larger than the tobacco mosaic virus, which has a molecular weight of 15–20 million and a sedimentation constant of $191\text{–}239 \times 10^{-13}$.[1] The particle is stable at 37° C. but can be dispersed by heating at 100° C. for several hours. It may also be dispersed by trichloracetic acid or potassium hydroxide. The dispersed glycogen can not be separated at 12,000 r.p.m.; this is the speed used to separate the original particle. According to Oakley and Young,[2] glycogen separated by the usual methods has a molecular weight of only two million. Clearly, then, particulate glycogen is an aggregate of smaller glycogen units.

The particle contains a high percentage of water; however, practically all the dried residue is glycogen. The dried particle also contains about 1 per cent. protein. This protein may play an important role in the maintenance of the particle, inasmuch as all the agents which disperse the particulate glycogen markedly alter the protein. None of these is thought to alter the properties of glycogen.

It is clear that, if this protein, or some other agent, combines with the dispersed glycogen as the latter is synthesized in the liver cell the glycogen will be removed from solution. By the law of Mass Action the enzymatic reaction

$$\text{Glucose-1-phosphate} \rightleftharpoons \text{Glycogen} + \text{Phosphate}$$

would be shifted in favor of glycogen synthesis, therefore facilitating glycogen storage in the liver. The concentration of glucose in the liver cell would be diminished. This would favor the removal of glucose from the blood stream and a consequent lowering of blood sugar.

The action of this coacervating agent, which may be protein, seems to parallel the action of insulin, because insulin is known to lower blood sugar and facilitate glycogen storage in the liver. The relationship, if any, between the protein contained in particulate glycogen and insulin is being investigated.

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AN UNIDENTIFIED VIRUS WHICH PRODUCES PNEUMONIA AND SYSTEMIC INFECTION IN MICE[1]

IN the course of attempts to isolate viruses by direct inoculation of albino Swiss mice with throat washings from clinical cases of influenza, non-influenzal pneumonias were frequently encountered in the passage mice. The pneumonias observed were of two types. One type was grossly indistinguishable from that produced by influenza virus, and the etiological agent of this type was found to be a filtrable virus

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[1] Erriksson-Quensel and Svedberg, *Jour. Am. Chem. Soc.*, 58: 1863, 1936.

[2] Oakley and Young, *Biochem. Jour.*, 30: 868, 1936.

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