Over-Purified Rickets Cure

Physiology

Ergosterol, the stuff that gives certain fats and oils their power to prevent rickets when irradiated with ultra-violet light, has been split chemically into two related compounds. One of them retains the old name ergosterol, and the other is called isoergosterol. By highly refined chemical treatment the latter compound can be obtained in an extremely pure state. A mixture of ergosterol and isoergosterol exposed to ultra-violet light behaves in very much the same manner as natural ergosterol, so far as the spectroscope discloses; yet this synthetic mixture failed to prevent rickets in a group of experimental animals, according to a report presented before the Thirteenth International Physiological Congress. The experiments were performed by Doctors C. E. Bills, E. M. Honeywell, W. M. Cox, Jr., and A. M. Wirick, of Evansville, Indiana.

The experimenters conclude that a spectroscopic study of ergosterol can not yet be relied upon to give an index to the curative power of any given sample, but that experiments with animals must continue to be made.

They also found that the length of time needed to give ergosterol a certain curative strength varies according to the substance in which it is dissolved. Moreover, the solvent need not be transparent; arachis oil, the one used commercially, is not transparent yet permits a high degree of activation. A further discovery of the Indiana investigators is that activated ergosterol is remarkably non-poisonous. Quantities from 4,000 to 40,000 times as large as the therapeutic dose have been fed to rats before physiological disturbance resulted.

Science News-Letter, August 24, 1929

Starch for Diabetes

Physiology

The uncooked food idea may be elevated from its present low estate of a suspected fad to a position of real worth and dignity in the handling of diabetic patients, if the experiments of Dr. Sanford M. Rosenthal of Washington, D. C., are confirmed by further work. Dr. Rosenthal reported his researches before a meeting of the Thirteenth International Physiological Congress.

Dr. Rosenthal's statement, in part, was as follows:

"As a result of studies upon dogs and rabbits, it was found that the rate of digestion of raw starch, as measured by the increase in blood sugar, is markedly inhibited by acids. One cubic centimeter of 3.6 per cent. hydrochloric acid will almost completely prevent the intestinal digestion of raw starch for from one to three hours. This amount of acid does not affect the rise in blood sugar following glucose feeding.

"In humans similar findings were obtained with cooked starches. Cooked starches in man caused a rise in blood sugar as marked as though glucose were given, . . . but in nine normal adults 50 to 75 grams of raw starch caused no change in blood sugar.

"This principle was applied to diabetics and the starch was fed as such, or as raw carrots, turnips or nuts. The increase in blood sugar was much less than that ordinarily detected after a starch meal."

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Bee Poisons Studied

Physiology

The use of living plants as laboratories in which various animal poisons may be differentiated by their effects on the plants was described by Dr. David I. Macht of the Johns Hopkins University before the Thirteenth International Physiological Congress.

Drugs of vegetable origin, he declared, are frequently more poisonous to animals than to plants and vice versa. A toxin discovered by Dr. Macht in the blood of pernicious anemia patients is not present in secondary anemia and similar blood disorders. The effect of this poison on plant seedlings has furnished a convenient diagnostic test for distinguishing pernicious anemia from related blood disturbances at certain stages of its development so that curative treatment can be started earlier than would overwise be possible.

A toxin just discovered in the blood of lepers, Dr. Macht stated, "serves to differentiate leprosy from blood sera of tuberculosis and syphilis and led to an important discovery in regard to its therapy.

"Further observations to be reported are on the blood of malaria, eclampsia sera, and on the extreme toxicity of certain animal poisons—of the toad, bee, ant, and particularly snake venoms."

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Juice Aids Insulin

Physiology

It seems probable that the pancreas, which secretes insulin "internally" from certain patches of tissue known as the isles of Langerhans, also produces a substance with an insulin-like power to break down sugar, which passes through its duct as an "external" secretion into the digestive tract. This possibility was laid before the Thirteenth International Physiological Congress by Dr. W. N. Boldyreff of Battle Creek, Mich.

Earlier work by Dr. Boldyreff and others had shown that pancreatic juice has the power to split glucose, the sugar commonly present in the blood, producing lactic acid. And although the secretion of the pancreas is normally emptied into the intestine, it soon passes through the walls and is taken up by the blood, as experiments in the speaker's laboratory showed. There is, then, according to Dr. Boldyreff, no reason for assuming that the control of blood sugar is a function monopolized by insulin.

As a further check on the experiment, the "external" secretion of the pancreas was prevented from being discharged into the digestive tract of dogs by suitable surgical means. In each case the blood sugar of the animal increased, in spite of the fact that the "internal" secretion (insulin) was still being discharged into the blood from the isles of Langerhans.

Dr. Boldyreff is of the opinion that the external pancreatic secretion may serve as a valuable addition to insulin.

Science News-Letter, August 24, 1929

Grow Better on Meat

Physiology

Vegetarians who are heads of families would do well to look at the results of some growth experiments reported to the Thirteenth International Physiological Congress by Dr. Chi Che Wang, Bernice Huddlestun and Irving Graef of the University of Chicago.

This group of scientists has made two series of experiments on eight children between the ages of four to twelve years. In the first series the children received half the amount of protein or meat element in their diet that they had in the second.

"Metabolic studies showed," said Dr. Wang, "that without exception the rate of growth was more than doubled during the high protein period, the average gain being 82 grams per child per day as against 29 grams for the low protein diet."

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