BIOCHEMISTRY

Growth Stimulator Isolated; Found Similar to Vitamins

Twenty Milligrams of Pantothenic Acid Extracted From Several Hundred Pounds of Liver, Chemists Told

WITH a hint that it may have a future practical bearing on the cancer problem, chemists gathering for the semi-annual assay of progress conducted by the American Chemical Society were greeted with the announcement that pantothenic acid, believed to be a universal essential in growth and respiration of the cells of living bodies, has been isolated.

This important contribution to an understanding of the chemical nature of life processes has been made by Prof. Roger J. Williams of Oregon State College, who first reported the existence of pantothenic acid two years ago.

WEED TOPS DRINK DEATH

Camel thorn and other tough intractable weeds are being attacked through their tops rather than their roots, in California. Their tops are stuffed into quart jars, which are then filled with a one per cent. solution of sodium arsenite or some other herbicide. Thousands of obstinate bushes have been eliminated by this method, which was devised by Walter S. Ball of the California State Department of Agriculture.

Although the amount of pure acid obtained by Prof. Williams was scarcely equivalent in weight to half a drop of water, about twenty milligrams, it proved sufficient for a dozen or more analyses of its chemical composition.

Pantothenic acid, Prof. Williams found, is composed of just four elements, carbon, hydrogen, oxygen and nitrogen, united in such way that the resulting product is somewhat similar to the vitamins and to the amino acids which are fundamental building blocks in protein.

The molecular structure of the acid has not yet been completely worked out. One of the handicaps to structural studies is the difficulty of obtaining enough of the substance in pure form. Several hundred pounds of liver were required to yield the first twenty milligrams.

In making his report, Prof. Williams said:

"The peculiar quality which makes pantothenic acid interesting is its ability to act as a growth regulator. Tiny amounts have a remarkably stimulating effect on the growth of various types of plants and single-celled animals.

"The problem of how growth is controlled in living organisms has long been a fascinating one. From a practical standpoint the fundamental facts concerning upsets in this growth control, such as occur in tumors, are essential to the solution of the cancer problem."

Chicken Food Factor Confirmed

As an unexpected preliminary to the national symposium on vitamins, two research men of the University of California announced that they have confirmed the findings of Dr. H. Dam of Copenhagen, Denmark, relative to the existence of a new essential food factor for chickens, which Dr. Dam calls vitamin K.

The American researchers, H. J. Almquist and E. L. R. Stokstad of the department of poultry husbandry at the University, state that without knowing of Dr. Dam's work they arrived at results equivalent to his independently. They are not, however, ready to pronounce the mysterious food factor a separate entity meriting placement on the list of recognized vitamins.

Absence of the supposedly new factor in the diet of chickens receiving adequate amounts of all known vitamins leads to a nutritional disease characterized by internal hemorrhage, hemophilia and anemia, and usually terminated by death. Affected baby chicks bleed to death following extraction of a few pinfeathers.

The disease can be cured, it has been found, by adding fresh or dried green food to the diet which already contains all known essential food factors. Alfalfa is especially potent, and concentrations of the new factor can be obtained by ether extraction and heating with an alkaline substance.

Curiously, rice bran and fish meal, which ordinarily do not prevent the disease, will develop traces of the factor if allowed to stand for some time in a wet condition.

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MEDICINE

Copper as Important In Food as Iron

DEFICIENCY of copper in the body may play as important a part in certain forms of anemia as does a deficiency of iron, Prof. C. A. Elvehjem of the University of Wisconsin has reported.

"Though mothers include iron in the baby's diet, generally in the form of spinach or other green vegetables," Prof. Elvehjem said, "a large percentage of so-called well-fed infants when examined by physicians display the symptoms of a noticeable anemia."

In explanation of this he reported that experiments during the past three years on anemic rats indicate that the administration of iron does not stimulate the maximum production of red blood cells unless traces of copper are added to the treatment. He also warned that the administration of over-large amounts of iron to children may cause them to develop rickets.

In further support of the fact that various metallic elements are extremely essential to life processes, Dr. David M. Greenberg of the University of California reported that although magnesium is needed by the body in such small quantities that most ordinary diets supply enough of it, there are situations in which magnesium deficiency might occur.

As examples he cited the case of babies subsisting on human milk alone; and mothers during pregnancy. Human milk is deficient in magnesium, and during pregnancy mothers apparently require a greatly increased amount of this element for the mineralization of the infant's bones.

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