NEWS
JOURNAL OF
Agricultural and Food Chemistry
• Biochemical Engineering
• Fermentation
• Food Processing
• Nutrition
• Pesticides
• Plant Nutrients and Regulators

Growing Fat May Be Worse for Heart Than Being Fat

Liver fat increase indicated in amino acid supplementation . . . Copper, manganese, and molybdenum deficiencies affect bones and heart muscle

WHITE SULFUR SPRINGS, W. VA.—Active obesity, or growing fat, may be a much greater hazard in metabolic heart disease than static obesity, or being fat, according to Fred Stare, department of nutrition, Harvard. He told the food industries advisory committee of the Nutrition Foundation, meeting here, that this is an idea he and his colleagues have developed but not yet studied fully and that further research is needed. Dr. Stare reported human studies indicating that initial obesity is not a determining factor in serum lipid changes and rate of weight loss appeared only slightly concerned. But strong positive caloric balance, even in the presence of low lipid intake, was associated with significant increases of serum cholesterol and lipid proteins. He presented the opinion that elevated serum lipid levels contribute to the causation of atherosclerosis.

In studies with monkeys, Dr. Stare reported on the research of his colleague, George Mann, who was able to induce atherosclerosis in a form apparently identical to that seen in humans, in 18 to 20 weeks through dietary means. The diet was low in sulfur-containing amino acids, high in fat, and high in cholesterol. None of the control animals developed atherosclerosis in the same period, nor did those with higher sulfur-containing amino acids or low cholesterol diets.

Amino Acids and Liver Fat. Preliminary data from studies on effects of amino acid supplementation of cereal diets fed weaning rats indicated some increase in liver fat, according to C. A. Elvehjem, University of Wisconsin. Using various cereal diets, essential amino acids were added to observe effect on growth and liver fat. With a diet composed 90% of rice, growth was improved by the addition of threonine and lysine but a significant increase in liver fat was also found. Dr. Elvehjem noted that these preliminary data suggest the desirability of thorough studies of effects of individual amino acid supplementation before proceeding with such additions for improvement of vegetable proteins, as has been suggested on occasion.

Trace Elements in Bone and Muscle Development. Copper, molybdenum, and manganese relationships in animal diet appear to be important in bone development, according to George Davis, Florida Agricultural Experiment Station. He also described malfunctioning of the heart muscle which may be attributed to copper, molybdenum, and phosphate relationship.

Workers in Dr. Davis' laboratory showed that rats on a low copper–high molybdenum diet suffered almost complete calcification in ribs. Cattle on similarly deficient diet developed an erosion of the joints. With rabbits and guinea pigs, changes were suggestive of symptoms of manganese deficiency found in chickens and rabbits. Higher manganese supplement alleviated, but did not eliminate the trouble in rabbits. As the copper level was comparable with that in natural foods, it was concluded that the high molybdenum probably interferes with the action of the copper.

Dr. Davis and coworkers observed massive myocardial degeneration in cattle, in circumstances of copper deficiency associated with borderline phosphorus deficiency. The nature of muscle degeneration suggests a rapid change in oxidation-reduction phenomena, and attention is now being given to trace element nutrition and the enzyme systems of the heart, particularly to the function of copper in muscle metabolism.

Copper-cobalt relationships in ruminant nutrition were reported to be especially interesting by Dr. Davis. A level of cobalt, as sulfate, approximately twice that considered adequate, reduced copper requirements markedly below that needed with lower cobalt intake. Massive doses of vitamin B_{12} failed to give a response comparable to that produced with cobalt sulfate.

Charles Glen King (left), Nutrition Foundation, in a postsession discussion with H. E. Robinson of Swift & Co., who made a strong plea at the meeting for establishment of an organization for nutrition education, and Grace Goldsmith of Tulane, who described work in anemia