

Proceedings of the Iowa Academy of Science

Volume 41 | Annual Issue

Article 59

1934

Further Studies on the Nutritive Value of Alcohol-Extracted Animal Tissues and the Supplements Required for Growth and Lactation

Walter H. Seegers
State University of Iowa

H. A. Mattill
State University of Iowa

Copyright ©1934 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Seegers, Walter H. and Mattill, H. A. (1934) "Further Studies on the Nutritive Value of Alcohol-Extracted Animal Tissues and the Supplements Required for Growth and Lactation," *Proceedings of the Iowa Academy of Science*, 41(1), 173-174.

Available at: <https://scholarworks.uni.edu/pias/vol41/iss1/59>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

SOME CHEMICAL PROPERTIES OF VITAMIN E

H. S. OLCOTT

In continuation of work toward the isolation and identification of vitamin E,¹ the following observations have been made. The inactive product obtained by mild bromination of vitamin E concentrates can be reactivated by boiling with Zn dust and HCl in methanol solution. Vitamin E was not destroyed by the catalytic hydrogenation of concentrates at 200° and 200 atmospheres pressure,² but the concentrates, after such treatment, were still unsaturated, as indicated by iodine number determinations. An active concentrate of vitamin E has been prepared from crude cottonseed oil.

BIOCHEMICAL LABORATORY,
STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

FURTHER STUDIES ON THE NUTRITIVE VALUE OF
ALCOHOL-EXTRACTED ANIMAL TISSUES AND
THE SUPPLEMENTS REQUIRED FOR
GROWTH AND LACTATION

WALTER H. SEEGER AND H. A. MATTILL

In order to reveal more clearly the nutritive value of beef heart, kidney, round, and liver, these tissues, after hot alcohol extraction, were incorporated at a 15 per cent protein level in a ration adequate in the recognized factors necessary for normal nutrition. A simultaneous study of the whole dried tissues, at the same level of protein intake, revealed that rats fed the whole tissue made better gains than those on the respective extracted tissues. In those groups receiving the extracted material the most rapid growth was on kidney, and the poorest on liver, while round and heart gave intermediate growth.

Lactation was studied by the method of Kozłowska, McCay, and Maynard(1), with the following basal ration: alcohol-extracted liver 18.7 per cent, hydrogenated cottonseed oil (Crisco) 15 per cent, corn-starch 49.8 per cent, yeast 10 per cent, salt mixture(2) 4.5 per cent, and agar 2 per cent, supplemented daily with 0.5 gm. of yeast and 0.5 cc. of cod liver oil.

¹ Olcott, H. S., and Mattill, H. A., J. Biol. Chem. 104, 423 (1934).

² We are indebted to Professor H. Adkins of the University of Wisconsin for carrying out the hydrogenation.

The growth of nurslings of mothers on this ration was unsatisfactory and mortality was high. When the mothers were given in addition 3 gm. of raw or 0.9 gm. dried liver daily the growth rate of the young was increased and mortality was low. An extract of autolyzed liver and an alcoholic extract of powdered skim milk were less effective in improving the ration. A carefully prepared alcohol extract of dried liver apparently supplied the deficiency.

BIBLIOGRAPHY

1. KOZLOWSKA, M., McCAY, C. M., AND MAYNARD, L. A., J. Nutrition 5, 61 (1932).
2. HAWK, P. B., AND OSER, B. L., Science, 74, 369 (1931).

BIOCHEMICAL LABORATORY,
STATE UNIVERSITY OF IOWA,
IOWA CITY, IOWA.

THE PRODUCTION OF KYNURENIC ACID FROM
TRYPTOPHANE AND INDOLE DERIVATIVES

LYLE C. BAUGUËSS AND CLARENCE P. BERG

The production of kynurenic acid from derivatives closely related to tryptophane serves as a means of indicating whether the animal organism is able to accomplish the changes necessary to convert such derivatives into tryptophane itself, or into some product intermediate in the transformation of tryptophane to kynurenic acid. With this in mind, a number of *l*-tryptophane and indole derivatives were prepared and administered to rabbits, both *per os* and subcutaneously, in amounts molecularly equivalent to 1 gm. of tryptophane and the kynurenic acid produced was estimated.

Two types of *l*-tryptophane derivatives were employed, tryptophane amides (the free amide, the mono-ethyl and the di-ethyl amides, the analide, and the ethyl anilide) and substituted carbonic acid derivatives of tryptophane (carbomethoxy, carboethoxy, carbopropoxy, carbophenoxy, and carbobenzoxy). Of the former all were as efficient as free *l*-tryptophane in producing kynurenic acid; of the latter none underwent conversion.

Of the several indole derivatives prepared and tested (β -3-indoleacrylic acid, α -oximino- β -3-indolepropionic acid, *l*-, and *dl*- β -3-indolelactic acid, and β -3-indolepyruvic acid), only the β -3-indolepyruvic acid and the *dl*- β -3-indolelactic acid yielded kynurenic acid. The amount isolated after the administration of these two