extensions of this approach may be possible since our preliminary experiments with basic dyes such as methylene blue and acriflavin indicate that these dyestuffs potentiate the action of tyrothricin and the anionic detergent, Tergitol-7, in the same way as does the protamine. (2) The similarity in chemical structure of protamine, histone, tyrothricin and the germicidal protein from wheat[12] strengthens the suggestion made by Dubos and Hotchkiss[1] that certain relatively simple polypeptide configurations may serve as the basis for a large group of antibacterial compounds. Since protamines from different species of fish vary considerably in chemical composition, it should be desirable to investigate the antibacterial effects of a number of protamines. The antibacterial properties of partial hydrolysis products of the protamines and histones, as well as of similar synthetic polypeptides, merit further study.

Chemotherapeutic applications of protamine or histone are probably greatly limited by the relatively high toxicity of these compounds when administered intravenously or intraperitoneally.[8, 13] Our preliminary tests confirm the results in the literature, but indicate that these compounds have no apparent toxicity for such a tissue as the rabbit eye.

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THE EFFECT OF VITAMIN E ON THE BLOOD PLASMA LIPIDS OF THE CHICK[1]

IN a previous communication[2] Dam and Glavind have drawn attention to the fact that the two lipotropic substances, lipocaic and inositol, can to a considerable degree protect against the exudative diathesis in vitamin E deficient chicks, whereas addition of cholesterol to the vitamin E deficient diet accelerates and aggravates the symptom.

We have now made a study of the fasting level of the lipids in the blood plasma of chicks living on vitamin E deficient diets with or without the addition of lipocaic or vitamin E. This study has shown that vitamin E exerts an effect on the plasma lipids similar to that of lipocaic and that the ingestion of cholesterol acts in the opposite direction.

The observed effect of adding vitamin E or lipocaic to the vitamin E deficient diet consists in an increase of the average ratio of the phospholipids to the other lipid fractions (total lipids, cholesterol or fatty acids) of about 20 to 40 per cent., whereas addition of cholesterol to the diet lowers this ratio without increasing the absolute cholesterol content of the plasma. The values for the individual chicks within a group of 5 chicks receiving the same diet show considerable variation so that it is not possible to predict from a simple determination of the plasma lipids of one single chick whether the animal belongs to the protected group or not. This is, however, not astonishing when attention is paid to the great individual variation of the lipid values in humans which renders it impossible, for instance, to diagnose pregnancy from a plasma cholesterol determination even if there is a definite hypercholesterolemia during pregnancy.

Since any effect on the blood plasma lipids must be a consequence of changes in the metabolism of the lipids in tissue, our observations suggest that vitamin E has a lipotropic effect similar to that of lipocaic. Further investigation of this problem must determine whether direct evidence for such an effect of vitamin E on tissue lipids can be found and whether a particular fraction of the phospholipids is involved.

Whereas a sufficient dose of vitamin E gives complete protection against exudates, lipocaic does not seem to give absolute protection but merely brings down the incidence of the symptom from 80 to 100 per cent. in the group receiving the basal diet to 10 to 20 per cent. in the lipocaic group. This seems to indicate that the effect of vitamin E is of a more fundamental nature than that of lipocaic and is not confined to the lipotropic effect alone—or that lipocaic probably remedies only one of the consequences of the lack of vitamin E.

Since vitamin E and lipocaic[3] apparently can bring about the same change of the blood plasma lipids, it is likely that the vitamin E deficient chick is lacking in the active principle of lipocaic, which would mean that the formation of this substance in the body of the chick depends upon the presence of vitamin E in the diet. This question should be elucidated by further experiments.

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VITAMIN C CONTENT OF PERSIMMON LEAVES AND FRUITS

PERSIMMON leaves have been found to give excep-

[12] A. K. Balls, W. S. Hale and T. H. Harris, *Cereal Chem.*, 19: 279, 1942.

[13] W. B. Shelley, M. P. Hodgkins and M. B. Visscher, *Proc. Soc. Exp. Biol. and Med.*, 50: 300, 1942.

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[2] H. Dam and J. Glavind, SCIENCE, 96: 235, 1942.

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