that ingested in the milk. The time required to bring about practically complete transformation of the intestinal flora to the acidophilus type varied with the individuals studied, from several days to several weeks. This observation is based on frequent cultural examinations of the stools according to Rettger's technique. In general, the excretion of indican (and of phenols to a less extent), increased early in the treatment with acidophilus, followed by a gradual lowering as the treatment continued; the amounts of these products did not usually fall below those excreted before the acidophilus feeding. If indican excretion may be taken as an index of intestinal putrefaction, it appears that implantation of *B. acidophilus* in the intestine does not necessarily lower putrefactive processes in the intestine.

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Is cystin synthesized in the animal body?

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We undertook a series of experiments in order to determine which of the amino acids occurring in proteins were possible of synthesis in the animal organism. According to Abderhalden, any of the aliphatic amino acids should be synthesized, but probably none of the hetero-cyclic or aromatic acids. It has already been shown that glycocoll can be built in the animal organism[1] [2] and we have previously shown[3] that glycocoll and also glutamine can be synthesized in the human body at the expense of nitrogen which would otherwise be found in the urea portion of the urine, and peculiarly that both acids are prepared simultaneously as well as singly.

Recent feeding experiments have shown that cystin is a necessary amino acid in protein if growth or maintenance of body weight is desired, therefore indicating that neither cystin nor cystein is synthesized in the organism.

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[1] McCollum, E. V., and Hoogland, D., *Jour. Biol. Chem.*, 1913, xvi, 311.

[2] Lewis, H. B., *Jour. Biol. Chem.*, 1914, xviii, 225.

[3] Shiple, G., and Sherwin, C. P., *Jour. Amer. Chem. Soc.*, 1922, xliv, 618.

In 1879 Baumann[4] and Jaffe[5] independently discovered that brom-benzene fed to dogs is detoxicated by joining the cystein molecule followed by an acetylation of the amino group of the latter.

We thought that perhaps under these conditions of brom-benzene intoxication it might be possible for the organism to synthesize cystein, although it was unable to do so for dietary purposes.

Kopfhammer[6] at this time published a paper showing that on a non-protein diet the dog is unable to synthesize cystein, although at the same time fed brom-benzene. We then undertook three series of experiments. In the first we placed the dog on a carbohydrate diet and fed each day brom-benzene. Besides this on the first two days we fed sodium sulphate, the second two days we fed taurine, the next two days calcium sulfate, the following two days sodium sulphocyanate, then following this ethylamino mercaptan, and finally cystin. Thus the dog was furnished more than sufficient sulphur in many different forms but was unable to use it for the elaboration of cystein. Only when cystin was fed was there a detoxication of brom-benzene in the manner described above. The second experiment was a repetition of the first but added to this was sufficient ammonium acetate to furnish inorganic nitrogen for the amino group of cystein, but still no synthesis of this amino acid. The same results were obtained in a third experiment which was a repetition of the second, only gelatine was added to furnish the organic nitrogen instead of the inorganic nitrogen.

It is safe to say therefore that cystein and consequently cystin can not be synthesized in the animal body even under the strain of brom-benzene poisoning when inorganic or organic nitrogen is furnished for the amino nitrogen and different forms of sulphur for the sulphydril group.

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[4] Baumann, E. and Preusse, C., *Ber. chem. Gesellsch.*, 1879, xii, 806.

[5] Jaffé, M., *Ber. chem. Gesellsch*, 1879, xii, 1092.

[6] Kopfhammer, J., *Zeit. Physiol. Chem.*, 1921, cxvi, 302.