4375

Molasses, Sorghum, and Honey as Sources of Vitamin E.

M. W. TAYLOR AND V. E. NELSON.

From the Laboratories of Physiological Chemistry, Iowa State College.

Previous work in this laboratory has shown that cane molasses is a good source of vitamin B. Data accumulated during the past year show that it is also a good source of the reproductive vitamin. The following products have been studied for their content of vitamin E: cane molasses or black strap, 3 kinds of beet molasses, sorghum, and honey. The 3 different beet molasses studied were: straight beet, Steffen, and barium residue molasses.

Crude cane or black strap molasses when added to a synthetic diet to the extent of 3% furnishes a good source of vitamin E. Five per cent in the ration proved ample not only for reproduction but also for rearing of young. Ninety-two per cent of the young were weaned on the 5% level and 58% on the 3% level. Beet molasses and sorghum contain some vitamin E but much less than cane molasses. The straight beet molasses was richer in vitamin E than the other kinds of beet molasses. No young were obtained on rations containing honey equivalent to 3 and 5% of the ration. The basal diet employed in these experiments consisted of purified casein 18, salt mixture (185) 3.7, filtered butter fat 5, yeast 12, and dextrin to 100. First litters are invariably born on this diet and since no young were born on the diets containing honey it may be that this is due to an anti-vitamin E factor.

The experiments in this paper employed 12 animals on the control and 12 animals on each of the different products tested. Since each product was run at two levels (5 and 3%) six animals were employed on the experimental rations on each level.

4376

Effect of Different Levels of Protein Intake on Reproduction.

RUTH FOUST AND V. E. NELSON.

From the Laboratory of Physiological Chemistry, Iowa State College, Ames, Iowa.

Considerable work has been done on the effect of high protein diets on growth and general well being. The effect of high protein diets on the kidneys has also been studied. The data of Drum-

mond,[1] Osborne and Mendel,[2] and McCollum[3] and their associates have largely been confined to these phases of study. Comparatively little has been done on reproduction.

The diets employed by us consisted of casein from 18 to 79.3%, salt mixture (185) 3.7%, wheat embryo 12%, cod liver oil (Squibb) daily 5%, and the remainder of the ration was composed of dextrin to 100%. The following levels of casein were studied: 18, 25, 30, 40, 50, 60, 75.3 and 79.3%. Growth was normal on levels of 18 to and including 60% casein but below normal on higher levels. Reproduction was good on all levels of casein studied, but was delayed on the levels above 60%. No young were weaned on the 79.3% level. Young were weaned on the lower levels and most successfully on the 18% level of casein. The young weaned on the 18 and 25% levels were normal in weight but on higher levels of casein growth of the young was stunted.

The experiments employed 7 animals on each lot, 3 males and 4 females. In other words there were 7 animals on each level of protein.

4377

Effect of Toxins and Venoms upon Protozoa.

CHARLES H. PHILPOTT. (Introduced by J. J. Bronfenbrenner.)

From the Department of Bacteriology and Immunology of the Washington University Medical School and the Zoological Laboratory of the University of Missouri.

Since the completion of a previous study on the effect of pathogenic bacteria and bacterial toxins upon paramecia,[1] an investigation has been in progress on the effect of snake venoms and of toxins (tetanus, ricin and botulinus) upon protozoa. The recent appearance of Tunnicliff's related study with other toxins,[2] and particularly her consideration of the use of paramecia for determining the strength of antitoxins, has made advisable the recording of a pre-

[1] Drummond, J. C., Crowden, G. P., and Hill, E. L. G., *J. Physiol.*, 1922, lxvi, 413. Reader, V., and Drummond, J. C., *Biochem. J.*, 1926, xx, 1256.

[2] Osborne, T. B., Mendel, L. B., Park, E. A., and Winternitz, M. C., *J. Biol. Chem.*, 1926-27, lxxi, 317.

[3] Polvogt, L. M., McCollum, E. V., and Simmonds, Nina, *Johns Hopkins Bull.*, 1923, xxxiv, 168.

[1] Philpott, C. H., *J. Morph. and Physiol.*, 1928, xlvi, 85.

[2] Tunnicliff, Ruth, PROC. SOC. EXP. BIOL. AND MED., 1929, xxvi, 213.