

Growth Vitamin Found in Milk

Physiological Chemistry

Milk contains a hitherto unrecognized factor, which is vitamin in character, and is essential for the growth of chicks and for the prevention of a peculiar type of paralysis which results in incurable deformities if long continued, according to an experiment recently finished by L. C. Norris, G. F. Heuser and H. S. Wilgus, Jr., of the Cornell University agricultural experiment station. It is possible that the effects obtained from this factor have previously been credited to vitamin B.

The discovery was accidental to a certain extent and resulted from an attempt to get a chick ration low in calcium and phosphorus, which would be suitable for studying the requirements of chicks for these minerals. In order to be satisfactory such a ration should produce a rate of growth, when properly supplemented with calcium and phosphorus, equal to that obtained by good poultrymen.

Since milk, meat scrap and fish meal are rich sources of these minerals, it was decided to use casein, a purified milk protein, as the main source of protein in the experimental ration. This protein contains only mere traces of vitamin B.

Its lack of this vitamin was considered a serious difficulty. To overcome it, resort was made to a milk vitamin B concentrate furnished by a commercial company. This concentrate has been shown to be as rich as yeast in vitamin B.

White Leghorn chicks were used to determine the value of the ration. They were divided into three lots, A, B, and C. Each lot contained 30 chicks.

Lot A was fed the experimental ration, supplemented by 7.14 per cent. of the milk vitamin B concentrate, while lot B received the same ration plus 2.68 per cent. of the concentrate. These quantities of the vitamin concentrate represented respectively the approximate amounts of vitamin B in 20 per cent. and 7 per cent. dried milk, and corresponded to two rations already giving satisfactory growth in experimental work.

For the first two weeks all lots grew at about the same rate. However, at the end of the third week, lot C, which received the unsupplemented ration, had fallen behind in growth. It never again equalled the other lots, although toward the end of the experiment this lot partially recovered and developed at the same rate as the other lots.

In addition to the slow growth a peculiar type of leg weakness, entirely distinct from rickets, appeared in lot C at the third week. The birds lost the use of their legs to a large extent and frequently walked on their hocks. The toes curled up and in the advanced stages the birds lay upon the floor with legs sprawled out.

The affected birds failed to grow normally and several died. The skin of these birds was harsh and dry. Approximately 50 per cent. of this

lot was lame at the end of the fifth week.

In lot B two cases of lameness occurred during the third and fourth weeks. One of them died at 7 weeks and the other failed to grow to any extent throughout the remainder of the experiment.

Attempts to cure severe cases of this deformity by means of yeast and the milk vitamin B concentrate failed, although they were hand fed definite quantities of these products for two weeks.

No lameness developed in lot A, but one chick with slightly crooked toes was observed at the twelfth week. Whether or not this was a mild attack of the condition described could not be determined.

It is apparent from these results that this so-called milk vitamin B concentrate contains some factor which accelerates the growth of chicks and prevents a certain type of leg weakness or paralysis. It does not appear that the two vitamins into which vitamin B has recently been divided can be credited with producing these effects. For present purposes these vitamins may be called B-1 and B-2.

It would be unwise, however, to conclude from this experiment that milk should be invariably used in all poultry rations. Good chicks have been reared in the past with little or no milk. Good winter egg production has also often been obtained with rations which contained no milk.

Science News-Letter, July 27, 1929

Smoke Cigarettes Slowly

Physiology

Smoke cigarettes with small intermittent puffs, taking ten minutes to each cigarette. Throw a cigarette away when the stump is still long. Don't inhale. Pick an oriental tobacco. Don't smoke before meals.

This is good advice to those who must smoke, as extracted from the scientific report of Dr. Emil Bogen of Cincinnati, who, with cigarette smoking machines and human smoke testers, investigated more than fifty different brands of tobacco on the market. Talking before the American Medical Association meeting, Dr. Bogen explained his extensive researches.

Nicotine is not the only injurious agent in cigarette smoke. Aldehydes, similar to poisonous compounds in bootleg liquor, are formed during the combustion of the tobacco; ammonia

is contained in the fumes from smoldering cigarettes; heat of the smoke is harmful to the mouth; and tarry substances, sometimes called tobacco oil, are irritating. Headaches and other effects are caused by the inhalation of carbon monoxide contained in smoke.

Dr. Bogen discovered that simply holding a lighted cigarette in the hand produced more toxic materials in the room air than result from active smoking when smoke is drawn through tobacco and into the mouth. Smoke from the burning end is of more consequence to non-smokers who breathe it than to smokers who indulge moderately. Smoke from the cigarette's end contains most of the material of the cigarette, and Dr. Bogen's analysis shows that it contains

a considerable amount of ammonia, a chemical that causes eye and nose irritation. But smoke from the lighted end has little of the deadly carbon monoxide, such as is present in smoke drawn swiftly into the mouth.

Radical difference in nicotine content of the inhaled smoke, depending upon the rate of smoking, caused Dr. Bogen to recommend slow and short puffing. Fast and furious smoking makes it possible to carry into the system with the smoke half of the cigarette's nicotine content.

Discovery that stumps of partially smoked cigarettes act as filters and catch nicotine, increasing the stump's narcotic content by two-thirds, caused Dr. Bogen to suggest smoking cigarettes only half way.

Science News-Letter, July 27, 1929