Manganese (0.1 mg. Mn per rat daily) as $MnCl_2$ when fed with $FeCl_3$ to anemic rats did not increase the value of hemoglobin above the value obtained on iron alone. Rats on whole milk, wheat embryo oil, and $FeCl_3$ did not reproduce. Copper sulphate addition to the above ration resulted in normal reproduction—3 females producing 9 litters of 59 young in 109 days. Lactation was fair. The milk used analyzed between 0.35 and 0.44 mg. Cu per liter. The cane sugar contained no copper. Unless otherwise indicated the $FeCl_3$ was fed at a level of 0.5 mg. Fe and the $CuSO_4$ was fed at a 0.05 mg. Cu level.

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Cod Liver Oil for Reproduction and Lactation.

H. O. SMITH AND V. E. NELSON.

From the Laboratories of Physiological Chemistry, Iowa State College.

Previous work in this laboratory has emphasized the fact that cod liver oil contains vitamin E. Some investigators have not had success with cod liver oil as a source of this vitamin, so it was deemed advisable to test different cod liver oils for their potency in the reproductive vitamin. The rations consisted of casein 18.0, salt mixture 185, 3.7, yeast 12, different cod liver oils from 1 to 5, and dextrin to 100%. Eight cod liver oils were examined. The growing ration served as a control and was outstandingly the best of the group. The growing ration gave a value of 5.4, whereas the oils gave the following figures: 1.79, 1.12, 0.88, 0.73, 0.72, 0.66, 0.56, and 0.08. The figures represent the number of young produced per female per month on each ration. Some of the oils contain far more vitamin E than others, although they contain less than some of our natural foods.

The mortality of the young varied with the kind of oil and the level at which administered. Five percent of one oil gave a mortality of 18%, while the same amount of another oil gave a mortality of 100%. The mortality with the first oil was no higher than on the growing ration. A 3% level of the better oil mentioned above gave a mortality of 9%, whereas the other oil gave a mortality of 70%. A considerable number of females died in pregnancy on the various cod liver oil rations. The mortalities of the females in pregnancy on the different oils, expressed as percent, were: 14, 5, 43, 36, 17, 19, 4, and 39. There appeared to be no relation between the mortality of the female and the potency of the oil in vitamin E.