

1718. EFFECT OF FEEDING AN ATHEROGENIC DIET ON MAGNESIUM REQUIREMENT. Joseph J. Vitale,* P. L. White,* M. Nakamura* and D. M. Hegsted. Dept. of Nutrition, Harvard School of Public Health, Boston, Mass.

The addition of thyroxine to the diet of rats results in an inhibition of growth and a decrease in the serum magnesium levels, both of which are partially overcome by feeding excess magnesium. These observations together with the known effect of thyroxine on the level of serum cholesterol led us to investigate the effect of feeding an atherogenic diet on Mg metabolism. A 10% protein and 20% fat diet, with and without cholesterol (1%) and cholate (.3%) and containing various levels of Mg (12, 24, 48, 96 and 192 mg %) was fed to weanling rats for 24 days at which time blood samples were drawn and the animals killed for histological study. The control animals fed the diets containing no cholesterol and cholate grew maximally when fed 24 mg % Mg, had an average serum Mg level of 1.9 mg %, had no morphological changes in any of the organs examined and had serum cholesterol concentrations ranging from 90 to 110 mg %. Animals fed the diets with cholesterol and cholate did not grow maximally, had low levels of serum Mg, high levels of serum cholesterol (639-808 mg %), and had an extensive heart score (Sudanophilia of heart and aorta). Increasing the Mg content of the diet to 192 mg % largely overcame all of these effects except the level of serum cholesterol which remained high. It is concluded that the atherogenic diet used in these studies produces a magnesium deficiency accompanied by hypercholesteremia and an extensive Sudanophilia of the heart and aorta. (Extensive kidney lesions were also produced in these rats, see abstract by E. Hellerstein and N. Zamcheck.)