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Rats on diets high in phosphorous and low in calcium.

GRACE MEDES.

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It has been reported by a number of investigators^{1, 2, 3} that rats become rachitic on diets high in P and low in Ca.

Two rats were kept on a normal diet (A) containing 302 mg. P and 414 mg. Ca per 100 gm. diet. Another group of two were given a diet (B) low in P (124 mg. P and 372 mg. Ca per 100 gm. diet). A third group of two were given a diet (C) containing 1044 mg. P and 19 mg. Ca per 100 gm. diet. After three weeks the rats were photographed by X-rays and ashed. The ash was analyzed for Ca, P and Mg. The X-ray photograph showed that the bones of the rats on low Ca, high P were normal, except for a slight osteoporosis. In marked contrast to those on normal diet and diet low in Ca, both rats which received diet (B) became rachitic.

The percentages of Ca and P in the ash of those on diet C were slightly less than in normal rats (♀) of their own age. The P/Ca ratio in the ash of the rats was normal (0.72). The rachitic index figured by McClendon's formula⁴ was (A) 5.2, (B) 1.4, and (C) 2.0.

Diet	Sex	Av. age	Av. wt.	Ash of rat						
				Composition			Per cent body wt.			
				Ca	P	Mg	Ca	P	Mg	
A. Normal	♂	52	101	749	564	39	0.74	0.56	0.039	Normal
	♀	51	67	562	434	27	0.84	0.64	0.041	
B. Low P	♂	48	75	454	268	21	0.60	0.36	0.028	Severe rickets
	♀	48	73	320	195	23	0.44	0.27	0.032	
C. Low Ca, High P	♀	51	66	469	350	27	0.72	0.53	0.041	Decreased calcification. No rickets.

¹ McCollum, E. V., and Simmonds, Nina, *Am. J. Hyg.*, 1922, i, 492.

² Pappenheimer, A. M., McCann, G. F., and Zucker, T. F., *J. Exp. Med.*, 1922, xxxv, 447.

³ Kramer, B., (personal communication).

⁴ McClendon, J. F., *Am. J. Physiol.*, 1922, lxi, 373.