

Magnesium metabolism in growing pigs

A. POINTILLART, Michèle ESTABLIER *, Nicole FONTAINE,
Colette COLIN

I.N.R.A., Station de Recherches de Nutrition, 78350 Jouy-en-Josas

** Stagiaire 1981-1982 de l'École nationale supérieure féminine d'Agriculture
de Rennes
France*

This report gives data obtained on Mg metabolism from several experiments with 130 growing pigs (from 15 to 60 kg). Standard (cereals and soyabean meal) and semi-synthetic (casein and starch) diets with various levels of calcium, magnesium, phosphorus and vitamin D, were used. The following parameters were measured : absorption, retention, urinary and faecal excretion, plasma and bone Mg levels. Mg-P interaction was also considered. Whatever the diet, the faecal and urinary excretion as well as the absorption and retention of magnesium depended on the dietary Mg level. A high correlation was found between Mg intake and all those parameters (from 0.85 to 0.99). The lowest correlation appeared between urinary Mg and Mg intake because of a high negative interaction between phosphorus/or magnesium intake and urinary magnesium/or phosphorus excretion : the higher the phosphorus ingestion, the lower the urinary magnesium excretion and vice versa. In contrast to other species in which a high antagonism effect is generally observed between P and Mg absorption, a positive relationship was found between the absorption of these minerals in pigs. The minimum Mg requirement was calculated by extrapolation of endogenous Mg excretion in the faeces (400-700 mg/day). This can largely be satisfied by usual diets. Plasma levels ranged from 1.6 to 2 mg/100 ml (mean \pm SD, n = 500 was 1.83 ± 0.03) when animals were fed the control diets. Bone Mg contents ranged from 0.3 to 0.7 p. 100 on dry basis, with an overall mean of 0.4 p. 100 ; it decreased with age up to 4 months. These two parameters varied with the Mg intake and thus could not be used as requirement criteria. The apparent digestibility and retention coefficients of magnesium (30 and 20 p. 100 of Mg intake, respectively) were extremely variable from one experiment to another and were lower than those of Ca and P (near 50 p. 100). Mg deficiency is not important in practice, but this is not the case for Mg overload which in addition to diarrhea may lead to bone mineralization disturbances.

PATHOLOGIE**PATHOLOGY****Sow milk : humoral and cellular components involved
in protection of young piglets against infectious enteritis**

S. BERNARD, J.M. AYNAUD, H. SALMON

*I.N.R.A., Laboratoire de Pathologie porcine,
Centre de Recherches de Tours, Nouzilly, B.P. 1, 37380 Monnaie
France*

Sow milk has exceptional immunological qualities as compared with cow or ewe milk. Immunoglobulin concentration is high especially that of the IgA class. The concept of lactogenic immunity was clearly established 18 years ago, and numerous research works about T.G.E., *E. coli* or rotavirus have described the characteristics of immune protection