

Bioaccessibility of Calcium and Phosphorus in Milk Samples

A.R.A. Nogueira¹, C.M. Bossu^{1,2}, E.A. Menezes^{1,2}

¹ Grupo de Análise Instrumental Aplicada, Embrapa Pecuária Sudeste,
P.O. Box 339, São Carlos, SP, 13560-970, Brazil

² Departamento de Química, Universidade Federal de São Carlos, São Carlos, SP, Brazil
E-mail: anarita@cnpse.embrapa.br

Milk is an essential macro and micronutrients source for growth, development and health, and as one of the animal protein sources for all age's humans. This work aimed to study *in vitro* bioaccessibility with simulated gastric digestion in the Ca and P levels in samples of different kind of milk (UHT cow's milk, raw cow's milk, raw sheep milk, UHT goat's milk and soya's "milk"). The experiment was based on simulation of gastrointestinal digestion with pepsin-HCl during the gastric stage and pancreatic-biliary salts during the intestinal stage. The fraction of an element diffusing through a semi-permeable membrane during the intestinal stage is measured to predict the element's dialyzability. Microwave sample digestion was used in order to access the total amount of analytes. Referring to total, the percentages of dialyzed calcium were around $10 \pm 1\%$, $20 \pm 1\%$, $12 \pm 1\%$, $17 \pm 1\%$ and $16 \pm 1\%$, to raw sheep's milk, raw cow's milk, UHT cow's milk, UHT goat's milk and soya's "milk" samples, respectively. The results of dialyzed phosphorus were $10 \pm 1\%$, $30 \pm 1\%$, $32 \pm 1\%$, $36 \pm 3\%$ and $20 \pm 1\%$ for raw sheep's milk, cow's milk, UHT cow's milk, UHT goat's milk and soya's "milk" samples, respectively. It may be observed higher amount of phosphorus obtained by dialysis than calcium, except for the raw sheep's milk sample, with similar results. Calcium ranked dialysis percentage was: raw cow's milk > UHT goat's milk > soya's "milk" > UHT cow's milk > raw sheep's milk. Phosphorus ranked dialysis percentage was: UHT goat's milk > UHT cow's milk > raw cow's milk > soya's "milk" > raw sheep's milk. The results confirmed the methodology efficiency. *In vitro* method allows a preliminary estimate of the bioavailability of nutrients.

FAPESP, CNPq, CAPES