FORM AND RATE OF DIGESTION OF RAPESEED PROTEIN AMINO ACIDS

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The rate of appearance as well as the form in which are released amino acids during digestion in the gut must be taken into account when evaluating the nutritive quality of the proteins. These parameters could influence their rate of absorption and further utilization by the organism. In vitro amino acid digestibility of rapeseed concentrate (00, Tandem, CETIOM) was compared to casein isolate. Protein sources (supplied by INRA, France) were hydrolysed with pepsin at pH 1.9. After 30 min, the pH was raised to 7.5 and the mixture poured into the dialysis bag (MWCO 1000) of a digestion cell (Savoie, Gauthier, J. Food Sci., 51, 494, 1986) with pancreatin (enzyme: substrate ratio, 1:25). Sodium phosphate buffer (0.01 M, pH 7.5) circulation ensured the collection of digestion products (free amino acids and low molecular weight peptides) The fractions were chromatographed on Copper-Sephadex G-25 columns. Elution with sodium tetraborate buffer (0.05 M, pH 11) allowed the separation of peptides from amino acids. Digestion rate of rapeseed was half that of casein during the first period (0-3 hr), but was equivalent thereafter. The proportion of amino acids released as small peptides increased in the time (from 60% to over 70%) and remained more important with casein than with rapeseed. Some amino acids (Tyr, Phe, Met, Arg) were rapidly released while others were hydrolysed later in the digestion (Glu, Cys, Pro, Gly). In the first step of the digestion, easily hydrolysed amino acids are mostly released on their free form. Marked differences between rapeseed and casein were relevant of Relative Digestibility Index (RDI) of some amino acids. In rapeseed, RDI of Lys, Arg and Cys were much lower than those of casein while RDI of Cys, Phe and Asp were higher. Thereafter, mostly all RDI values were at the same level. The proportion of EAA on peptide form was always higher in casein than in rapeseed. (Supported by FCAR, grant no 1188 and MAPAQ, Québec).