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12. MEDICAL AND BIOLOGICAL FEATURES OF THE USE OF PHOSPHATES IN MEAT PRODUCTS

Inorganic phosphorus is an important component of deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). All energy production and storage depends on phosphorylated compounds such as adenosine triphosphate (ATP) and creatine phosphate.

Under various physiological conditions, such as lactation and growth, the body's phosphorus requirements are higher than under normal conditions. The estimated average requirement (EAR) for phosphorus in humans is 580 mg/day for phosphorus is 580 mg/day, which is the value required to maintain the concentration of concentration in serum above the lower limit (approximately 2.7 mg/L) of the normal range (2.7-4.5 mg/L). However, the EAR is a reliable indicator in only 50 percent of individuals. The Recommended Dietary Allowance (RDA) for phosphorus is 700 mg/day, which is sufficient dietary value to meet the needs of almost 97-98 percent of people.

The upper limit for level (UL) of phosphorus is 3000-4000 mg/day, which is the highest allowable daily intake without side effects in any individual. An intake of of approximately 3400 mg/day is the upper limit (approximately 4.5 mg/L) of the UL. Therefore, we can establish low phosphate levels in food below the EAR [1]. In addition, high concentrations of dietary phosphate can be set higher than the UL in healthy individuals.

Many different types of foods contain phosphorus, including dairy products, meat and poultry, fish, eggs, nuts, legumes, vegetables, and grain products. The rate of absorption of phosphorus naturally occurring in food is 40%-70%; phosphorus from animal sources sources has a higher absorption rate than that of plant sources.

Consumption and use of phosphates in food additives has been increasing recently. Various forms of phosphate are widely used as additives in food technology. products. For the production of meat products, sodium and partially potassium salts are used orthophosphoric (H_3PO_4), pyrophosphoric ($H_4P_2O_7$), tripolyphosphoric ($H_5P_3O_{10}$) and hexametaphosphoric (HPO_3) 6 acids. They differ in the degree of effect on proteins and fats of muscle tissue, which is mainly determined by the pH of their 1% solution.

Acidic salts reduce WHC of minced meat, neutral salts are characterized by low activity, and alkaline salts contribute to a shift in the pH of the medium to the alkaline side, giving the product an unpleasant taste. unpleasant taste to the product. Since the use of a single compound does not provide the desired result, it is preferable to use mixtures of acidic, neutral and alkaline phosphates, which increase and stabilize WHC of meat, do not increase the pH of the finished product above 6.5 and do not change its organoleptic properties [2].

However, an increase in the intake of phosphate supplements with food can cause vascular damage, such as vascular calcification and exacerbation of chronic kidney disease, increased serum phosphate levels have a negative impact on the body.

Reference

1. Calvo, M.S. and Uribarri, J. (2013): Public health impact of dietary phosphorus excess on bone and cardiovascular health in the general population. *Am. J. Clin. Nutr.*, 98, 6-15.
2. Страшинський І.М., Маринін А.І., Грицай М.С., Шкірдов Д.М. Перспективні технології

альтенативної заміни фосфатних препаратів у м'ясопродуктах Proceedings of the 2nd International Scientific and Practical Conference «Concepts for the Development of Society's Scientific Potential» (May 19-20, 2022). Prague, Czech Republic: Author-publishers miscellaneous, 2022. 384 p. с. 287-296.