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Polyamines in foods: Adverse and beneficial effects of polyamine intake

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Putrescine, spermidine and spermine are most abundant polycatioanic natural amines. They are involved in regulation of gene expression, translation, cell proliferation and differentiation, DNA, RNA and protein synthesis in mammal cells. They can be supplied by the endogenous synthesis inside the cell or by the intake from exogenous sources. Food is an important source of dietary polyamines. The polyamine content of foods is extremely wide ranging from a few nano moles to a few micromoles per gram. Seasonal variations, their origins, planting-husbandry methods, soil character, climate, process of foods, stock conditions cooking-preparing styles, and analysis methods are effective on polyamine concentrations in foods. In general, meat is rich in spermine, plant based foods contain mostly putrescine and spermidine, dairy products include mainly putrescine and spermidine, and among them, cheeses have higher polyamine values depending on fermentation conditions. Continuous intake of polyamine-rich food gradually increases blood polyamine levels. The normal adult diet provides a daily supply of several micromoles of polyamines. However, the optimum dietary intake of polyamines has not been identified yet. Any distortion of polyamine metabolism results in various pathological conditions including cancer, inflammation, stroke, renal failure and diabetes. Although there are enormous number of studies and reviews reporting the relation between polyamines and diseases, the role and depth effect of exogenous polyamines is not sufficiently clear. Their benefits can be changed depending on the specific polyamine and disease; they may be harmful, neutral or beneficial. Therefore food polyamine ingredients should be carefully evaluated depending on adverse and beneficial effects of polyamine intake.

Biography

Nihal Buyukuslu has completed her PhD from Nottingham University, Queens Medical School, Biochemistry Department, UK. She had experience in academia and industry. At present she is an Assistant Professor of Istanbul Medipol University, Nutrition and Dietetics Department. She has publications and projects on Biochemistry, Food and Nutrition Sciences.

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