Analytical and compositional aspects of isoflavones in food and their biological effects

This paper provides an overview of analytical techniques used to determine isoflavones (IFs) in foods and biological fluids with main emphasis on sample preparation methods. Factors influencing the content of IFs in food including processing and natural variability are summarized and an insight into IF databases is given. Comparisons of dietary intake of IFs in Asian and Western populations, in special subgroups like vegetarians, vegans, and infants are made and our knowledge on their absorption, distribution, metabolism, and excretion by the human body is presented. The influences of the gut microflora, age, gender, background diet, food matrix, and the chemical nature of the IFs on the metabolism of IFs are described. Potential mechanisms by which IFs may exert their actions are reviewed, and genetic polymorphism as determinants of biological response to soy IFs is discussed. The effects of IFs on a range of health outcomes including atherosclerosis, breast, intestinal, and prostate cancers, menopausal symptoms, bone health, and cognition are reviewed on the basis of the available in vitro, in vivo animal and human data.

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