Abstract

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Title of diploma thesis: The pharmakokinetics of isoflavonoids

The aim of this diploma thesis is to summarize currently available informations about the pharmacokinetics of the polyfenolic compounds from a large group of flavonoids, isoflavonoids. Isoflavonoids are coumpounds found in many plant families, but especially in some members of Fabaceae family. One of the main well-known sources are soy beans containing the most famous isoflavones – genistein and daidzein, their pharmakokinetics is the main theme of this diploma thesis. Since isoflavonoids are mainly contained in the diet, their oral administration is very relevant. Isoflanonoids in the human diet occurs predominantly in the form of glykosides and therefore, after ingestion, they have to be deglycosylated by β-glucosidase enzyme family to aglycones. After that they are able to pass through the intestine into the systemic circulation and they are available for action. This is already happening in the oral cavity and the absorption occurs in the small intestine. The intestinal bacterial microflora composition is also very important for pharmacokinetics, for example I can mention the differences between humans whether they are capable of producing equol, the metabolite of daidzein, or not. Phase II conjugative reactions (glucuronidation and sulfatation) are predominant in the metabolism than phase I (cytochrome P450). An important fact is that enterohepatic circulation plays a significant role in the pharmakokinetics of isoflavonoids and prolongs the half-life. Binding to plasma proteins (mainly human serum albumin) also prolongs the serum half-life. Aglycones and their metabolites are excreted mainly in the urine. Excretion by feces is a minor elimination pathway.