Attachment 2.

Abstract

„Biological availability and metabolism of selected genistein derivatives exhibiting antitumor activity"

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The aim of the presented work was to determine bioavailability and metabolism of synthetic genistein derivatives exhibiting better than genistein pharmacological properties and higher antitumor activity.

Bioavailability of synthetic derivatives was evaluated *in vitro* using the Parallel Artificial Membrane Permeability Assay and the Caco-2 cell monolayer model. The combination of these techniques allowed the determination of the rate of transport of the selected compounds and description of the mechanisms involved in their transport.

Concurrently, metabolism of the selected compounds was determined in *in vitro* models of the intestine epithelium and the liver.

The studies of bioavailability, metabolism, and stability of genistein derivatives were supplemented by the experiments *in vivo* in rats.

Moreover, as part of the doctoral dissertation, a new methodology for the quantitative determination of genistein and its derivatives in biological samples using high performance liquid chromatography combined with mass spectrometry was developed and validated. Additionally, a method for identification of metabolites of selected compounds formed during biological tests was developed.

The obtained results confirm that modification of the chemical structure of genistein produces derivatives not only with higher biological activity, but also with better bioavailability, thereby increases their potential use as active ingredients in new drugs.

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