Abstract

Flavonoids are secondary metabolisms of plants, that have wide range of biological activities. Between the most known activities are antioxidant activities, antibacterial activities, antivirus activities and chemoprotective activities. They are consumed as a part of plants to varying degrees by the population. They are consumed either in their plant forms, or as a nutritional supplement, such as pills. As nutritional supplement they don't fall under strict regulations and their effect or active quantity isn't always examined properly.

As a foreign substance to the body that is xenobiotics, they can fundamentally influence so called biotransformation enzymes, which apart from other handle metabolism of xenobiotics. One of those enzymes is *N*-acetyltransferase. This biotransformative enzyme, which among others metabolises lot of pharmaceuticals, shows number of polymorphisms, where the occurrence of some of those relates to different illnesses such as breast cancer or bladder cancer, diabetes, or Parkinson. The modulation activity of those enzyme can either hurt the organism or help it.

In this paper we will focus on inhibitive effect of flavonoids myricetin and dihydromyricetin to *N*-acetyltransferase especially the mechanism of this inhibition. Inhibition was measured in vitro for both steps of the two-substrate reaction to human *N*-acetyltransfeare 1 and 2.

It has been found that flavonoids myricetin and dihydromyricetin inhibit both isoforms of enzyme in the first step of the two-substrate reaction. Mechanism of inhibition both steps of catalysis NAT2 was described by the anticompetitive mechanism. In the case of NAT1 it was not possible to set the mechanism of the inhibition.

Key words: flavonoids, myricetin, dihydromyricetin, inhibition, N-acetyltarnsferase