Abstract

Dihydromyricetin (DHM), also ampelopsin, is a flavonoid compound which exhibits a broad spectrum of positive effects on the human body. Herbal extracts containing this compound have been widely used in traditional Chinese medicine mainly for their hepatoprotective properties. DHM also helps with alcohol intoxication and reduces the signs of hangover or abstinence.

Given the fact that the mechanism of DHM effects on the ethanol metabolism has not been clarified yet, the effect of dihydromyricetin on the expression and activity of alcohol dehydrogenase (ADH), one of the most important enzymes involved in ethanol metabolism, was therefore studied in this thesis.

The cultivation conditions of primary hepatocytes which were isolated from unpretreated and ethanol-pretreated rats and subsequently exposed to EtOH and DHM were optimized. While determining the degree of cell damage caused by EtOH in the presence of DHM, no significant trend in the protective effect of DHM was found. On the other hand, the protective effect of ethanol in hepatocytes cultivated in EtOH and DHM was detected by technique of ELISA (the determination of alanine transaminase). The Western blot technique followed by immunodetection did not detect the induction of ADH expression in hepatocytes. Furthemore, the modulation effect of DHM on the ADH activity in the samples of hepatocytes and on the activity of purified enzyme was not found. In compliance with these results, the ability of dihydromyricetin to influence the metabolic rate of ethanol was not proved in the mouse model. Based on the obtained data, it can be assumed that the declared hepatoprotective effects of DHM during alcohol intoxication are unlikely to be related to affect activity of alcohol dehydrogenase.

Key words: hepatocytes, alcohol dehydrogenase, flavonoids