

ABSTRACT

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Title of diploma thesis: Effect of sesquiterpenes on biotransformation enzymes in tissue slices

Sesquiterpenes are secondary metabolites, produced mainly by higher plants. They are structurally diverse compounds with a large spectrum of biological activity. They possess antiphlogistic, antibacterial, antimalarial and antitumour activity. The aim of this diploma thesis was to find out how selected sesquiterpenes - α -humulene (HUM) and β -caryophyllene (BC) influence the activity of chosen biotransformation enzymes - NAD(P)H-chinon oxidoreductase 1 (NQO1), glutathione S-transferase (GST) and sulfotransferase (SULT). Precision-cut tissue slices from the rat liver (*Rattus norvegicus*, tribe *Wistar*) were chosen as model system. Thickness of the slices was approximately 200-250 μm and diameter 8 mm. Liver slices were preincubated for 30 minutes and then incubated for 24 hours (in presence of HUM and BC) in a 12-well plate in the atmosphere of pneumoxide (95% O_2 /5% CO_2). Samples of liver slices and medium were taken upon replacing the medium after preincubation (time 0 hours) and then after 3, 6 and 24 hours. Both sesquiterpenes, HUM and BC, were tested at concentrations 25 $\mu\text{g/ml}$ and 50 $\mu\text{g/ml}$. Slices affected by HUM showed a slight decrease in activity of NQO1 after 24 hours of incubation. No effect of BC on NQO1 activity was detected. Activity of GST in slices affected by HUM and BC did not show any statistically significant change in comparison to control. Activity of SULT in slices affected by HUM and BC showed a decrease after 3 hours of incubation. However, after 6 and 24 hours there was not detected any change of activity in comparison to control.