

MEETING ABSTRACTS

MONOTERPENES MODULATE THE ACTIVITY AND EXPRESSION OF DETOXIFICATION ENZYMES IN HUMAN LIVER

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Monoterpenes, volatile molecules widely distributed in plants, are used in folk medicines, pharmaceutical and food industries, and cosmetics. Most terpenoids easily enter the human body by oral absorption, skin penetration, or inhalation leading to measurable blood concentrations. Numerous biological activities, including antitumor activity, of monoterpenes have been reported. On the other hand, some monoterpenes were reported to exhibit toxic effects in various organs of human organism, mostly in liver (1). The monoterpenes are also able to modulate the activity and/or expression of some drug-metabolizing enzymes. Present research was carried out to evaluate the effect of α -thujone (THU) or piperitone (PIP) on the activity and mRNA expression of the main detoxification enzymes in human liver. For this purpose, precision-cut liver slices (PCLS) were prepared from human liver samples (n=8) and incubated with THU or PIP (10 and 50 μ M) for 24 h. These concentrations were non-toxic in primary rat hepatocytes. In human PCLS, THU and PIP in both concentrations caused significant increase in the specific activity of glutathione S-transferase (GST), however, the extent was dependent on basal GST activity. Regarding mRNA expression, induction of NAD(P)H:quinone oxidoreductase, cytochrome P450 2B6, glutathione peroxidase 3, and superoxide dismutase 1 was observed in samples treated with PIP 50 μ M. The mRNA expression of GSTA and GSTP was induced by both compounds in several PCLS.

Funding: This work was funded by Charles University (Research Project SVV 260 550).

Keywords: α -thujone; (+)-piperitone; monoterpene; specific activity; precision-cut liver slices

References

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