Xenobiotica ›
the fate of foreign compounds in biological systems
Volume 48, 2018 - Issue 11

General Xenobiochemistry

The impact of sesquiterpenes β-caryophyllene oxide and *trans*-nerolidol on xenobiotic-metabolizing enzymes in mice *in vivo*

Kateřina Lněničková, Hana Svobodová, Lenka Skálová, Martin Ambrož, Filip Novák & **Petra Matoušková**

Pages 1089-1097 | Received 12 Sep 2017, Accepted 25 Oct 2017, Accepted author version posted online: 03 Nov 2017, Published online: 10 Nov 2017

 https://doi.org/10.1080/00498254.2017.1398359

Abstract

1. Sesquiterpenes, constituents of plant essential oil, are popular bioactive compounds due to the positive effect on human health, but their potential toxicity and possible herb-drug interactions are often omitted. In our *in vivo* study, we followed up the effect of *p.o.* administration of two sesquiterpenes β-caryophyllene oxide (CAO) and *trans*-nerolidol (NER) on various xenobiotic-metabolizing enzymes in mice liver and small intestine.

2. To spot the early effect of studied compounds, enzymatic activity and mRNA levels were assessed 6 and 24 h after single dose.

3. CAO and NER markedly increased cytochromes P450 (CYP2B, 3A, 2C) activity and mRNA levels in both tissues. Liver also showed elevated activity of aldo-ketoreductase 1C and carbonyl

oxidoreductase 1 activity in small intestine. Among conjugation enzymes, only liver sulfotransferase activity was increased by sesquiterpenes.

4. Our results document that single dose of sesquiterpenes modulate activities and expression of several xenobiotic-metabolizing enzymes.

Keywords: Cytochrome P450 drug-metabolizing enzyme enzyme induction terpenes

Declaration of interest

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Czech Science Foundation [grant number P303/12/G163] and by Charles University in Prague [Research Project SVV 260 294].