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Nerolidol and Farnesol Inhibit Some Cytochrome P450 Activities but Did Not Affect Other Xenobiotic-Metabolizing Enzymes in Rat and Human Hepatic Subcellular Fractions

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Abstract

Sesquiterpenes, 15-carbon compounds formed from three isoprenoid units, are the main components of plant essential oils. Sesquiterpenes occur in human food, but they are principally taken as components of many folk medicines and dietary supplements. The aim of our study was to test and compare the potential

effect of acyclic sesquiterpenes, *trans*-nerolidol, *cis*-nerolidol and farnesol, on the activity of cytochrome P450 and other xenobiotic-metabolizing enzymes in rat and human liver in vitro. Rat and human subcellular fractions were used as relatively specific substrates, corresponding coenzymes and HPLC, spectrophotometric or spectrofluorometric analysis of product formation were used. The results showed significant

RESULT
8 of 190

RESULT
10 of 190

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cytochromes P450 (namely CYP1A, CYP2B and CYP3A subfamilies) activities by all tested sesquiterpenes in rat as well as in human hepatic microsomes. On the other hand, all tested sesquiterpenes did not significantly affect the activities of carbonyl-reducing enzymes and conjugation enzymes. The results indicate that acyclic sesquiterpenes might affect CYP1A, CYP2B and CYP3A mediated metabolism of concurrently administered drugs and other xenobiotics. The possible drug-sesquiterpene interactions should be verified in in vivo experiments.

Keywords: drug-metabolizing enzymes; farnesol; inhibition; nerolidol.

Conflict of interest statement

The authors declare no conflict of interest. The founding sponsors had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, and in the decision to publish the results.

Figures

Figure 1 5 Structural formulae of used sesquiterpenes...

Figure 2 5 Michaelis-Menten plot of EROD and...

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