

Abstract

Mixed function oxidase system (MFO) is one of the most effective systems of enzymes of the first phase of biotransformation of xenobiotics. Cytochromes P450 seem to be the most important part of the MFO system, which also contains other components such as NADPH:CYP reductase and membrane lipids. Cytochromes P450 function as a terminal oxidase of the mixed function oxidase (MFO) system. Many xenobiotics, including drugs, are the substrates of these enzymes. Endogenous substances can serve as the substrates of these enzymes as well. Peroxidases are a group of enzymes which are able to metabolize drugs. The function of cytochromes P450 can be substituted by peroxidases. Both groups of enzymes are able to potentiate the effect of the drugs by activating them or they form deactivated metabolites, which are excreted from the organism. The action of cytochromes P450 and peroxidases is shown on the metabolism of the drug ellipticine. Ellipticine has anticancer effects. The advantage of this drug is its low number of side-effects. The oxidation of ellipticine by cytochromes P450 and peroxidases leads to its metabolic activation or detoxification. Carbenium ions are generated by spontaneous cleavage of two active metabolites, 12-hydroxyellipticine and 13-hydroxyellipticine. Carbenium ions then form adducts with deoxyguanosine base in DNA. The ellipticine can also act as an inducer of cytochromes P450 in some tissues.

Key words

Cytochromes P450, peroxidases, drugs metabolism, ellipticine.