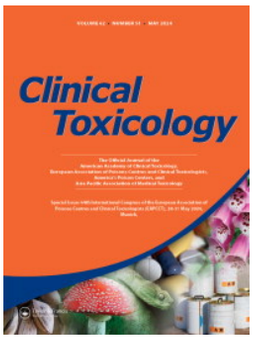

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LETTER TO THE EDITOR

THE EFFECT OF HASHISH-SMOKING ON SERUM LEVELS OF PANCREATIC LIPASE (EC 3.1.1.3) IN MAN

Although the cannabinoids seem to exert some alterations on almost every biological system studied, they do not appear to be highly toxic. The use of Δ^9-tetrahydrocannabinol (Δ^9-THC) is known to cause an increase of pancreatic weight in rats. However, its effects on the pancreatic function in cannabis-smokers have not been studied. Thus, the action of cannabis constituents on exocrine pancreatic function in chronic hashish smokers, under known experimental conditions, was investigated during this study.

Ten healthy volunteers, hashish smokers, and ten healthy regular tobacco users were used in this study, matched for age, sex and body weight. All subjects were free from any liver disease, did not take any other drug, consumed moderate quantities of alcohol, and smoked about 20 cigarettes per day. The hashish volunteers smoked daily 10 - 20 ng of Δ^9-THC (in content). Each of the hashish users was allowed to smoke 0.5 g of 3.6% in Δ^9-THC pure resin by water pipe for a period not exceeding 15 min. At the same time, and under the same conditions, each of the control subjects smoked about 1.5 g of pure tobacco by pipe. Blood samples were drawn before smoking and 45 and 90 min after smoking the hashish or tobacco. Forty five minutes after initiation of smoking, serum concentrations of Δ^9-THC were within the range of 45 - 65 ng/ml. Serum pancreatic lipase was measured using the Monotest Lipase Kit of Boehringer Mannheim GmbH.

This study showed that the pancreatic lipase activity of hashish smokers decreased significantly from the before smoking value (133 $\pm$ 40

U/L) to the 45 min (99 $\pm$ 31 U/L) and 90 min (84 $\pm$ 30 U/L) values ($p < 0.05$) and ($p < 0.01$) respectively. No differences in the concentration of serum glucose were observed. Furthermore, no significant differences existed in the same observed parameters of the control group before and after smoking tobacco. There was no statistically significant correlation between serum Δ^9-THC levels and pancreatic lipase levels.

The decrease of pancreatic lipase observed here, after smoking hashish, may be due to a decreased secretion or to a disturbance of the enzyme metabolism. This could be partially attributed to some alterations of the acinar tissue or of the organs involved in the metabolism of lipase as a result of an interaction with the membrane of cells or organelles. Cannabis components induce membrane lipid reorganization and there is evidence suggesting that the membrane disorder results from a specific interaction of cannabinoids with the lipid of protein components of membranes (1). Thus, the cell membrane is a primary site of action of cannabinoids and any small changes in membrane order can produce large changes in membrane function. The observed decrease in pancreatic lipase may be of importance to hashish users and who also suffer from pathological conditions such as diabetes and B-thalassemia major that cause a noticeable decrease of pancreatic lipase activity (2-3).

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