Hepatocyte Damage Induced by Carbon Tetrachloride: Inhibited Lipoprotein Secretion and Changed Lipoprotein Composition

Meinrad Boll*, Lutz W. D. Weber, Eberhard Becker and Andreas Stampfl

Institute of Toxicology, GSF – National Research Center for Environment and Health, München, Ingolstädter Landstrasse, D-85764 Neuherberg, Bundesrepublik Deutschland. Fax: 089/3187 3449. E-mail: Stampfl@gsf.de

* Author for correspondence and reprint requests

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Changes of lipoprotein secretion and composition in response to CCl_4 treatment were studied in monolayer cultures of rat primary hepatocytes.

(1) CCl_4 decreased secretion of very low density lipoproteins (VLDL) by about 85%, while high density lipoprotein (HDL) secretion was less affected (about 40%). The effect was concentration-dependent. (2) CCl_4 significantly inhibited secretion of VLDL- and HDL-associated triglycerides and cholesterol esters. VLDL- and HDL-associated cholesterol was not affected, while secretion of phospholipids was increased. (3) Hepatocytes secreted the apolipoproteins B_{48}, B_{100}, E, C, and A-I. CCl_4 reduced secretion of apoproteins associated with VLDL by almost 20%, and by about 75% when associated with HDL. The *de novo* synthesis of apolipoproteins was attenuated by CCl_4. (4) CCl_4 caused variations in the apolipoprotein composition in VLDL and HDL.

CCl_4 intoxication of the liver affected the morphology and/or function of the lipoproteins, which drastically impaired their ability to act as transport vehicles for lipids from the liver to the circulation.