Prague hereditary hypercholesterolemic (PHHC) rat is a specie, which is very sensitive to a dietary cholesterol. Our study deals with characteristics of nascent VLDL particles and introduces new method for measurements of reverse cholesterol transport in vivo on rats.

Characteristics of nascent VLDL particles

Production of VLDL particles was studied with two different rat species – Wistar and PHHC. VLDL particles were isolated from a serum 2 hours after i.v. application of Triton WR 1339. No dependence of cholesteromie of the Wistar rats on the diet was observed, while increase of about 45 % of cholesterol of PHHC rats was found. The count of triglycerides (TG) after application of tyloxapol steeply increased as a result of accumulation of VLDL particles. Small increase of cholesterol in VLDL particles was observed assuming Wistar rats on the cholesterol diet, while the same increase was found to be rapidly higher with PHHC rats on the same diet. Liver of PHHC rats on the cholesterol diet therefore products nascent VLDL particles significantly enriched with cholesterol.

Measurements of reverse cholesterol transport in vivo

Primary cell culture of macrophages obtained by the help of peritoneal lavage was incubated for 48 hours with 3H cholesterol and then intraperitoneally applicated to Wistar and PHHC rats. Level of 3H cholesterol in Wistar rats after 24 hours was found to be higher than that after 48 hours. Rats excreted approximately the same quantity of 3H cholesterol in time intervals 0–24 hours and 24–48 hours. Level of 3H cholesterol was measurable both in serum and in excrements. By the intraperitoneal application of sufficient quantum of macrophages labeled with 3H cholesterol it is possible to measure reverse transport of cholesterol in vivo.