Title
Reconstituted HDL particles remove cholesterol from giant unilamellar vesicles: Visualization by two-photon dual channel microscopy

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Abstract, Internal PDF

It is generally accepted that human High Density Lipoproteins (HDL) and their major component apolipoprotein A-I (apo A-I), play a central role as acceptors as well as carriers of the cholesterol released from membranes. The pre-B–HDL are responsible for 37-45% of the cholesterol efflux, however, the molecular basis for their ability to remove cholesterol from the cell membrane is not yet clear. The process may be the result of several mechanisms including microsolubilization of cholesterol and phospholipids by apo A-I. In this study we use dual-channel two-photon fluorescence microscopy and the membrane fluorescent dye Laurdan, to visualize the removal of cholesterol from individual GUVs by 2 types of reconstituted HDL (rHDL) particles and by the lipid-free apo A-I. The small rHDL particle of 78Å diameter showed a higher capability to remove cholesterol than the 96Å from POPC GUVs containing 20 % cholesterol. Under the same conditions, the lipid free apo A-I does not seem to be able to remove cholesterol. In the case of the rafts mixture (POPC/Sphingomyelin/cholesterol), the results suggest that the 78Å rHDL remove mainly POPC from the liquid phase.