

Experimental report

15/02/2021

Proposal: 9-13-931

Council: 4/2020

Title: Is lipid exchange directly related to the apolipoprotein present in HDL? A study with ApoA1, the most abundant apolipoprotein in human serum

Research area: Biology

This proposal is a continuation of 9-13-807

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Samples: reconstituted HDL

Apolipoprotein A1

DMPC bilayers

Instrument	Requested days	Allocated days	From	To
D17	2	0		
FIGARO	2	2	16/09/2020	18/09/2020

Abstract:

Atherosclerosis, resulting in cardiovascular disease, is the largest killer in the west. Low- and high-density lipoproteins play major roles in the processes involved in the development of this disease. Their involvement arises from the removal or deposition of lipids into artery walls. However, these processes are not fully understood, therefore determining the role of the particle and bilayer composition alike is of fundamental importance in the treatment of the disease. The aim of this study is to gain insight into the effect both the bilayer and the reconstituted HDL particle compositions have on the exchange rate of lipids, to help determine the specific roles of each of the components in turn.

Experimental Report for experiment: 9-13-931

Is lipid exchange directly related to the apolipoprotein present in HDL? A study with ApoA1, the most abundant apolipoprotein in human serum

The aim of the experiment was to determine the specific interactions of ApoA1 protein and ApoA1 based reconstituted HDL particles with model membranes of varying composition. The datasets are to complement some already measured data to give a complete set for publication.

During our beam time we incubated ApoA1 protein with saturated and unsaturated membranes, and ApoA1-rHDL with saturated membranes in the absence and presence of cholesterol. Analysis is underway and we hope to publish later this year. The quantities of lipid exchanged and removed are quite extensive for the ApoA1-rHDL. This data also complements previously measured data when similar experiments were carried out to determine the effect of cholesterol in the membrane against HDL (experiment 9-13-681, published *Scientific Reports* volume 9, 5118 (2019)) and ApoE-rHDL (experiments 9-13-894, 8-03-912, paper submitted).

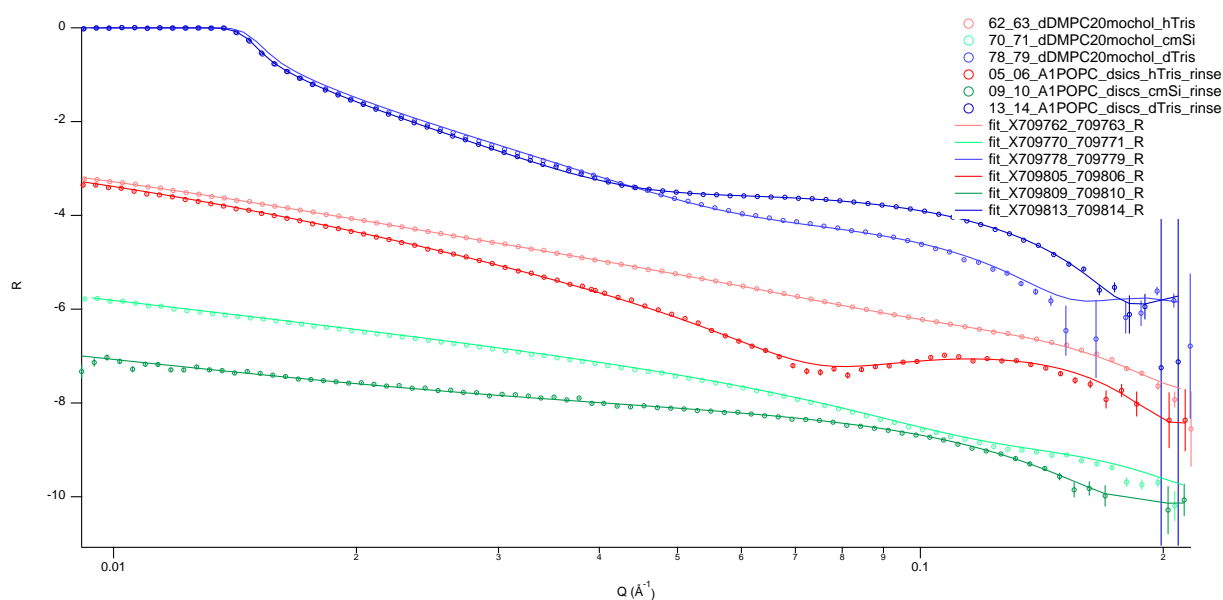


Figure 1. NR data of model membrane before (light colours) and after (darker colours) incubation with ApoA1-rHDL.