J Glycomics Lipidomics 2015, 5:4
http://dx.doi.org/10.4172/2153-0637.C1.003

OMICS International
conferenceseries.com

International Conference on
Lipid Science & Technology
November 30 - December 02, 2015 San Francisco, USA

Acrolein-conjugated LDL causes foam cell formation from macrophages

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Macrophage foam cell formation is hallmark of atherosclerosis. Acrolein is highly reactive alpha, beta-unsaturated aldehyde produced by polyamine oxidation following cell damage endogenously. Acrolein could conjugate to protein and generate acrolein-lysine adducts and intra- or extra- molecular cross-links. It has been reported that acrolein-lysine adducts were detected in human atherosclerotic lesions. Furthermore protein conjugated acrolein detected in human LDL. These finding suggests that acrolein may contribute to macrophage foam cell formation and atherogenesis through modification of LDL. The purpose of this study is whether acrolein-conjugated LDL (Acro-LDL) induces macrophages to foam cells. Acro-LDL was prepared by incubation of LDL and acrolein. The mobilities of Acro-LDL in agarose gel electrophoresis were increased by modification with acrolein, and there were dose-dependent manner of acrolein concentration used in modification. Acro-LDL induced higher cholesterol accumulation in macrophages derived from THP-1 cells than LDL and oxidized LDL. Anti-scavenger receptor class A type 1 (SR-A1) antibody inhibited uptake of Acro-LDL by macrophages derived from THP-1. Apolipoprotein B in Acro-LDL reacted with antibody for modified lysine, the molecular weight changed higher, and resisted to be hydrolyzed by lysosomal enzyme. Acidic cholesterol esterase and acyl-Coenzyme A: cholesterol acyltransferase activity was statistically increased in macrophages treated with Acro-LDL, but neutral cholesterol esterase activity did not change, resulting increase cholesteryl ester. It is concluded that macrophages are converted to foam cells by Acro-LDL via SR-A1 pathway.

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Effect of *Vernonia calvoana* leaf supplemented diets on selected biochemical parameters and body weight changes in Wistar rats

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Effects of dried *Vernonia calvoana* leaf (VCL) supplemented diets on selected lipid parameters and body weight changes were investigated in this study. Twenty four male Wistar rats (100-170g) were distributed into 4 groups of 6 rats each. Group 1 served as the control and received normal rat chow. Groups 2, 3 and 3 received the rat chow but with 5%, 15% and 30% incorporation of VCL, respectively for 31 days. Animals' body weights were measured once in every two days throughout the experiment period. At the end of the 31-day feeding the animals were fasted 12 hours prior to sacrifice. Blood was obtained via cardiac puncture and subjected to centrifugation in order to obtain sera for biochemical assay. Results show non- significant ($P>0.05$) increase in serum Alkaline phosphatase concentrations relative to the control. There was a marked increase in serum total protein levels though not significant. Body weight changes were significantly reduced in groups 3 and 4(15% and 30% supplementation) relative to the control. We therefore conclude that dietary supplementation of *Vernonia calvoana* leaf possesses probable body weight reducing potentials and also a protein biosynthesis promoting action.

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