The Role MCPIP-1 in Maintaining Lipid Homeostasis

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Background: Studies have shown that the accumulation of lipids is exacerbated by inflammatory chemokine proteins. Recent studies suggest that MCPIP1 may have a role in maintaining normal metabolic balance by negatively regulating chronic inflammation. Our preliminary data revealed that the MCPIP1 deficient mice have significant reduction of body lipid deposits compared to control mice. The current project was designed to test if MCPIP1 is involved in maintaining lipid homeostasis by affects hepatic lipid production and distribution.

Methods: MCPIP1 knockout mice with C57/BL6 background between 6-8 weeks of age were identified by PCR using ear tissue samples. The serum and liver from both control and MCPIP1 knockout mice were collected following overnight fasting. Liver samples were homogenized and the lipids were extracted using a chloroform methanol solution by following a published protocol. Lipid levels from serum (lipoproteins and total triglyceride) and livers (total cholesterol and triglyceride levels) were measured using commercially available kits.

Results: The data collected from eight samples (four from control and four from MCPIP1 knockout from the same litters) showed that the mean serum HDL concentration in the MCPIP1 knockout mice is about 41.8% lower than that of the control mice (0.18µg/µl verses 0.30 µg/µl), and the total triglyceride concentration in the knockout mice is slightly lower than those from control mice (0.97 mg/ml verses 1.5mg/ml). Conversely, the mean serum LDL/VLDL concentration in MCPIP1 knockout mice is about 87.5% higher than that of the control mice (0.32µg/µl verses 0.17µg/µl).

Conclusion: From the data collected thus far, there seems to be a trend of a decrease in serum HDL levels, a slight decrease in triglyceride, and an increase in serum LDL/VLDL levels in MCPIP1 knockout mice compared to control. If these trends continue it would suggest that MCPIP1 is involved in maintaining lipid homeostasis.

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