Effects of Dietary and Plasma Lipid Levels on Vascular Health Measures

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Cardiovascular disease remains the leading cause of death in the world. Research consistently shows that those at the highest risk are those with a higher level of cholesterol throughout the body. Poor nutrition and a sedentary lifestyle can cause elevated plasma cholesterol levels which lead to numerous medical conditions. Both nutrition and activity level can also impact body fat and vascular measures such as brachial flow-mediated dilation (FMD) and intima-media thickness (IMT). To the best of our knowledge, no study has compared plasma and dietary lipid levels with vascular health in a young adult population. **PURPOSE:** To examine the relationship between dietary lipids, plasma circulating lipid levels, and vascular health measures. **METHODS:** Sixty one fasted adults (30M, 31F) with an average age of 25.3±11 years were included in our study. All participants completed a three-day dietary recall and underwent fasted lipid level, blood pressure, body composition, carotid artery IMT, and flow-mediated dilation FMD measurements. **RESULTS:** The participants' average diet over the three-day period was 2244.9±537.3 calories; including 18.3% fat, 60.2% carbohydrates, and 21.3% protein. Plasma lipid levels were all within the healthy range (total cholesterol: 158.9±33.8 mg/dL; HDL: 50.6±16.4 mg/dL; triglycerides: 89.4±39.4; and LDL: 94.8±27.8 mg/dL). We found an indirect relationship between dietary saturated fat intake and plasma HDL levels ($r= -0.279$, $p<0.05$). Also, we found a direct relationship between dietary mono-unsaturated fat intake and IMT levels ($r=0.269$, $p<0.05$). Results also displayed that measurements of the fasted lipid LDL levels were directly related to carotid artery IMT ($r=0.283$, $p<0.05$). **CONCLUSION:** Our data suggests that dietary and plasma lipid levels have an association with vascular health measures in young adults. Future studies should be performed to examine inflammatory markers to further examine these relationships.