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### Prevention of atherosclerosis through dietary interventions

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**Introduction:** Atherosclerotic cardiovascular disease still remains as the top reasons for morbidity and mortality worldwide. It was reported that cardiovascular disease was the cause of 13.7 million deaths in 2013; this number of mortality is expected to reach 24 million by 2030. On average, every 40 seconds one person dies of cardiovascular disease in USA. Many epidemiological studies highlighted a strong positive association between diets and cardiovascular morbidity and mortality. We have reported that plant phytosterols significantly prevents atherogenesis in apo E-KO mice. Human studies reported cholesterol-lowering efficacy for phytosterols. Therefore, it is recommended that 2 grams of phytosterols may reduce cardiovascular risk.

**Objective:** to present anti-atherogenic effects of dietary agents.

**Methodology:** LDL-r-KO mice were fed with a diet enriched with wild rice at 60% (w/w), or Kgengwe seed powder at 10% (w/w) for 20 weeks. A control group was fed with normal mouse chow. At baseline and during the experimental course body weight, food intake, and plasma lipids were regularly measured. At the end of the study the hearts were examined by light microscopic techniques to evaluate the development of atherosclerotic lesions in the aortic roots. The aortae were used for examination of adhesion of monocytes to the endothelium. Final plasma samples were used to estimate the levels of several common cytokines.

**Findings:** Treatment with wild rice or Kgengwe seed powder was associated with reductions in plasma cholesterol levels. As compared to the control group, the treated groups had smaller atherosclerotic lesions in the aortic roots. This anti-atherogenic effect of the dietary agents was associated with beneficial effects on inflammatory mechanisms as assessed by monocyte adhesion to the endothelium or beneficial alterations in plasma cytokine profile.

**Conclusions:** Both wild rice and Kgengwe seed powder may prevent atherogenesis through reductions in plasma cholesterol levels and beneficial alteration in inflammatory biomarkers.