An Onion Byproduct Affects Plasma Lipids in Healthy Rats

Onion may contribute to the health effects associated with high fruit and vegetable consumption. A considerable amount of onion production ends up as waste that might find use in foods. Onion byproduct has not yet been explored for potential health benefits. The aim of this study is to elucidate the safety and potential role of onion byproducts in affecting risk markers of cardiovascular disease (CVD). For that purpose, the effects of an onion byproduct, Allium cepa L. cepa 'Recas' (OBP), and its two derived fractions, an ethanolic extract (OE) and a residue (OR), on the distribution of plasma lipids and on factors affecting cholesterol metabolism in healthy rats have been investigated. The OBP or its fractions did not significantly reduce cholesterol or down-regulate hepatic 3-hydroxy-3-methylglutaryl-coenzyme A reductase (Hmgcr) gene expression. The OR even had the effect of increasing plasma triacylglycerides (TAG) and cholesterol in the very low density lipoprotein (VLDL-C) fraction. Neither total bile acids nor total primary or secondary bile acids were significantly affected by feeding rats the OBP or its fractions. Principal component analysis combining all markers revealed that the controls could be completely separated from OBP, OE, and OR groups in the scores plot and also that OE and OR groups were separated. Plasma lipids and bile acid excretion were the discriminating loading factors for separating OE and OR but also contributed to the separation of onion-fed animals and controls. It was concluded that the onion byproduct did not present significant beneficial effects on individual markers related to plasma lipid transport in this healthy rat model but that onion byproduct contains factors with the ability to modulate plasma lipids and lipoprotein levels.