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DO ALCOHOLIC BEVERAGES PREVENT THE DEVELOPMENT OF ATHEROSCLEROSIS IN THE RABBIT?

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Nearly two decades ago, Klurfeld and Kritchevsky (K&K) reported that administration of certain alcoholic beverages, notably red wine, to rabbits consuming a diet simulating that of the average American reduced the incidence of aortic atherosclerosis after a 3-month period (Exp. Mol. Pathol. 34.62–71,1981). This widely cited paper has never been confirmed, or extended by the original authors. The objective of this pilot project was to test the validity of these observations preparatory to a large-scale study of this issue. Male New Zealand white rabbits weighing 3.5±0.20 Kg were randomly assigned to the following 4 beverage groups: controls; whiskey; white wine; red wine. They were fed a commercially prepared customised diet to provide the same nutrients as that of K&K, including 0.5% cholesterol. In the First Set (n=2) of experiments, the drinking water of the controls contained 12.5% glucose (isocaloric) and that of the experimental groups 9.5% ethanol, as in the protocol of K&K, food and water being *ad lib*. In the Second Set (n=3), the drinking water of the controls contained 6.25% glucose and that of the experimental groups 4.75% ethanol. The experimental groups ate and drank *ad lib* but the intake of the controls was adjusted to the mean of the former on the previous day. Blood was drawn initially and at 2-weekly intervals for lipid and lipoprotein assays, and the animals were sacrificed after 90 days followed by exsanguination and removal of livers. The entire aorta down to the bifurcation was removed, opened, washed and stained with Oil Red-O. The results of the First Set demonstrated a marked reduction in food and liquid intake, in body weight gain, and in liver weight in the experimental groups, accompanied by slight increases and decreases in HDL-C and LDL-C, respectively, as well as continuous and severe inebriation. Atherosclerosis was less marked in both wine groups and greater in the whiskey group than the controls. In the Second Set, intakes and weight gain were relatively constant but the liver weights were moderately reduced in the experimental groups and serum TG concentrations were greatly increased. Both wines, but not whiskey, caused a marked reduction in HDL-C. Atherosclerosis was higher in the whiskey group but the same as controls in both wine groups. We conclude that in this animal model, alcohol in the doses used does not protect against atherosclerosis which is not associated with the same changes in lipids as occur in the human disease.

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