

NAVY BEANS AND NAVY BEAN SAPONINS LOWER PLASMA CHOLESTEROL CONCENTRATIONS IN RATS

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Isolated saponins from a number of different plant species have been shown to lower plasma cholesterol concentrations when fed to animals (Malinow et al. 1977, Oakenfull et al. 1984). Saponins are present in navy beans (Fenwick and Oakenfull 1983) which are a variety of *Phaseolus vulgaris* and beans belonging to the same species are known to lower plasma cholesterol concentrations in animals and human subjects (Grande et al. 1965). We have therefore investigated the effects of feeding navy beans and isolated navy bean saponins on plasma cholesterol concentrations in rats.

The diets were based on a standard hypercholesterolaemic diet containing (per kg) cholesterol (10g) and sodium cholate (1.8g), with corn starch (556g), casein (180g), bran (135g), corn oil (80g), vitamins and minerals. The navy beans (cooked, dried and finely ground) were added in amounts such that their protein replaced the casein with the other ingredients appropriately adjusted. Two varieties with different saponin contents were used - Kerman (6.4g saponin per kg dry weight) and Gallaroy (19g saponin per kg dry weight). Isolated navy bean saponin was obtained by Soxhlet extraction and purified by a method based on that of Kitagawa et al. (1976).

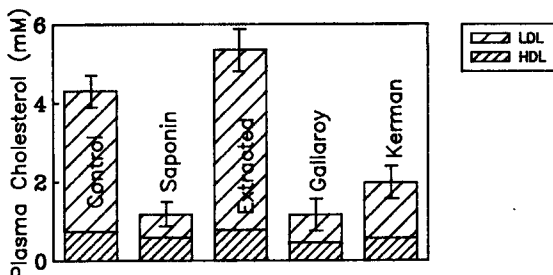


Fig. Plasma cholesterol concentrations (mean \pm SD; 5 animals per group) in rats fed navy beans or isolated navy bean saponins.

After three weeks we found that the animals fed navy beans or saponin had lower plasma cholesterol concentrations than the control group (see Fig.). The magnitude of the effects from the two varieties reflected their respective saponin contents. There was no significant cholesterol lowering effect with navy beans which had been subjected to solvent extraction (acetone followed by methanol) to remove saponins.

Thus, the cholesterol lowering effect of navy beans appears to be due to their saponin content. Navy beans are eaten extensively in Australia as 'baked beans' and might usefully be included in cholesterol lowering diets.

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