

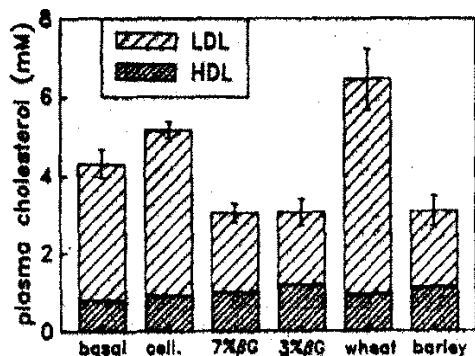
EFFECTS OF BARLEY AND ISOLATED BARLEY β -GLUCANS ON PLASMA AND LIVER CHOLESTEROL CONCENTRATIONS IN THE RAT

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Barley and barley-based food products may have considerable potential as a dietary means of lowering plasma cholesterol (Newman et al. 1989). This study confirms that barley has a powerful cholesterol-lowering action, compared with wheat, and suggests that the β -glucans are, at least in part, responsible for this effect.

Rats of the Wistar strain (ca 200 g) were fed hypercholesterolaemic diets containing (per kg), either barley flour or wholemeal wheat flour (600 g), sucrose (165 g), casein (130 g), cholesterol (10 g), sodium cholate (2 g), and supplemented with minerals and vitamins. There were 10 animals in each group and they were fed 20 g diet per animal per day for a period of 3 weeks. The LDL cholesterol was substantially lower in the rats fed barley compared with the wheat treatment group. In addition, barley gave lower concentrations of cholesterol in the liver, lower caecal pH and larger caeca.

In a second experiment, carried out concurrently, the animals were fed diets containing one of two levels of isolated barley β -glucan which were compared with a fibre-free diet and with one containing purified α -cellulose. The diets contained (per kg), corn starch (500 g), sucrose (123 g), casein (193 g), corn oil (100 g) whey powder (29 g), cholesterol (10 g), sodium cholate (2 g) and vitamins and minerals. Cellulose or β -glucan were added as part substitution for corn starch. LDL cholesterol concentrations were substantially lower in the β -glucan groups and the lowering was the same for both 3% and 7% β -glucan. Like the animals fed barley flour, the β -glucan-fed animals had larger caeca and more acidic caecal contents than those fed the cellulose or fibre-free diets.



Plasma cholesterol concentrations in rats fed barley, wheat and isolated barley β -glucans (β G). Concentrations found with a basal, fibre-free diet and with purified α -cellulose are included for comparison.

Thus even small levels of barley β -glucan can have a powerful cholesterol-lowering effect and a significant effect on fermentation in the large bowel. There is considerable potential for greater use of barley and barley products for human consumption, particularly in baked goods, breakfast cereals and snackfoods.

NEWMAN, R.K., LEWIS, S.E., NEWMAN, C.W., BOIK, R.J. and RAMAGE, R.T. (1989). *Nutr. Rept. Internat.* 32: 749.

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