

THE EFFECT OF COPROPHAGY ON THE CHOLESTEROL-LOWERING
ACTION OF OAT BRAN IN THE RAT

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Coprophagy is an essential feature of the nutrition of the rat and relates to the contribution of the intestinal flora to the supply of B-vitamins, vitamin K and essential fatty acids (Barnes et al. 1963). These are poorly absorbed at their sites of synthesis (the caecum) and reingestion of faeces allows these nutrients to be absorbed by the small intestine.

The effect of coprophagy on plasma cholesterol in the rat has not been investigated. This is an important consideration as faecal refection may lead to reingestion of substantial amounts of cholesterol as bile acids which may alter the hypocholesterolaemic effect of oat bran. This study was designed to determine whether prevention of coprophagy influences the hypocholesterolaemic action of oat bran. By preventing coprophagy, reingestion of cholesterol was prevented and an enhanced plasma cholesterol-lowering action of oat bran was expected.

Male Hooded-Wistar rats were housed individually in wire-bottom cages with temperature maintained at $21 \pm 1^{\circ}\text{C}$ and a 12 hour light/dark cycle. Coprophagy was prevented by attaching a plastic cup over the anus into which faeces were collected. Coprophagy allowed rats had sham cups attached further down the tail allowing access to the anus for faecal refection. The animals were divided into two dietary groups, oat bran (OB) (TEST group) or wheat bran (WB) (CONTROL group).

Results showed that plasma cholesterol levels were unaffected by coprophagy prevention and OB-fed animals produced significantly lower plasma cholesterol levels than WB-fed animals (see table).

Diet	Coprophagy allowed	Coprophagy prevented
	Plasma total cholesterol (mmol/l)*	
OB	2.62 ± 0.08	2.51 ± 0.06
WB	3.37 ± 0.12	3.34 ± 0.11

*Mean of 6 observations per group \pm SEM

Food intake and body weight gain were unaffected by dietary regimen and coprophagy treatment except for depressed weight gain in the WB coprophagy prevented group.

We conclude that reingestion of cholesterol as bile acids by the rat does not affect the hypocholesterolaemic action of oat bran, and that it is appropriate to continue use of the rat as a model to investigate the hypocholesterolaemic mechanisms of soluble fibres such as oat bran.

BARNES, R.H., FIALA, G. and KWONG, E. (1963). Federation Proceedings 22: 125.