

CHANGES IN CHOLESTEROL METABOLISM IN INFANCY WITH CHANGES IN
CHOLESTEROL AND FAT INTAKE

by

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The regulation of the serum cholesterol level in infancy is not understood but it has been suggested that it is less precise than in adulthood. Ten infants, aged 3-16 months, were studied during two periods of one month each, firstly consuming a low-cholesterol, polyunsaturated fatty acid-rich diet and later a cholesterol containing, polyunsaturated fatty acid poor diet. Changes in serum cholesterol, bile acid excretion and net sterol balance (sterol excretion minus cholesterol intake) were measured at the end of each period.

The serum cholesterol level rose with the second diet in all infants by from 30 to 111 mg/100 ml. The theoretical response that might be expected in adults to a similar change in cholesterol and fat intake resembled that shown by seven of the infants, suggesting that the magnitude of the response becomes established in early life. Three showed a larger than predicted difference in serum cholesterol between the diets.

Bile acid excretion was significantly higher with dietary polyunsaturated fatty acids, probably explaining some of the effect on the serum cholesterol. The sterol balance data showed that the net sterol balance fell substantially during the consumption of cholesterol in seven of the ten infants. Although a steady state for cholesterol metabolism is not being claimed for growing infants, the fall in the net sterol balance is strongly suggestive of lessened endogenous cholesterol synthesis as reported in adults.

Of the three infants who showed a greater than predicted difference in serum cholesterol, one apparently failed to suppress cholesterol synthesis, another showed a large difference in bile acid excretion and the third, who showed the highest rise in serum cholesterol with cows milk, suffered from familial hypercholesterolemia.