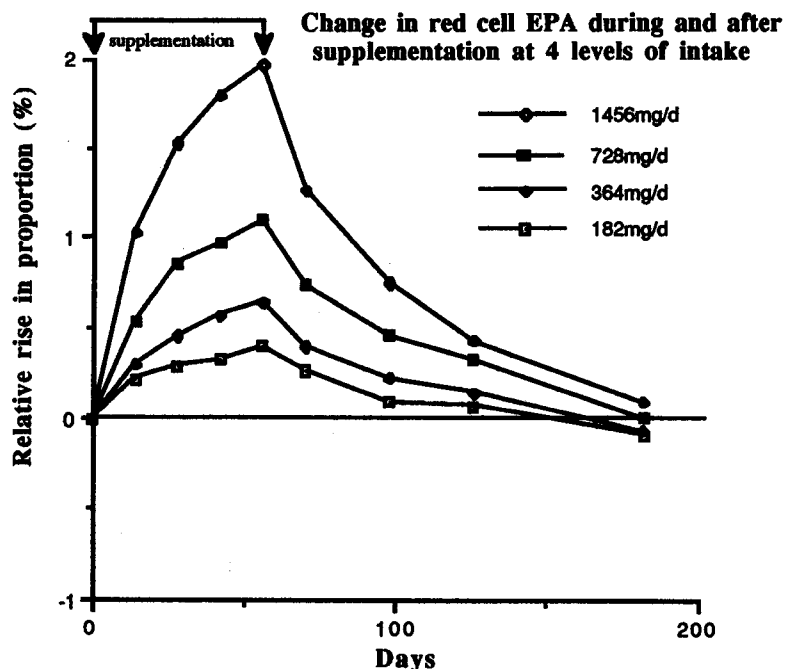


MEMBRANE CHANGES IN FATTY ACID COMPOSITION DURING AND AFTER FISH OIL FEEDING

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Membrane changes in omega-3 fatty acids in response to dietary intake have been reported, usually after high intakes or over short periods of time. This study looked at low intakes over a longer time and then followed the disappearance for a prolonged period.

Healthy males (35) were randomly assigned for 56 days to one of four doses of fish oil (either 1, 2, 4 or 8 g/day; providing 182 mg/g of eicosapentaenoic acid (EPA) and 122 mg/g of docosahexaenoic acid (DHA)) and then followed for another 126 days.



Erythrocyte membrane phospholipid EPA and DHA rose in linear manner according to dose over the period of supplementation and returned to baseline by the end of the follow-up period (Figure).

The initial rise (two weeks) was greater in EPA than DHA suggesting different mechanisms of incorporation. The rise in EPA and DHA was accompanied by a smaller rise in docosapentaenoic acid and a fall in oleic acid at all doses, while at the highest dose, linoleic acid and arachidonic acid fell. There was a dose related rise in the EPA to arachidonic acid ratio. For each dose, the post-supplementation fall in EPA was exponential while the fall in DHA was slower and linear suggesting different mechanisms of removal.

From this data, it was possible to postulate a priming dose and maintenance dose which would maintain EPA levels at double initial values. Fish oil would be needed for priming but food (fish meals) could provide the maintenance dose.