

The iron intake and status of Victorian, male vegetarians

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Current literature suggests that although vegetarian iron intake is in excess of recommended levels, their iron status is inferior to omnivores. Recent studies (1,2) have raised particular concern for vegetarian men with results indicating some to have serum ferritin levels below 12 ng/ml, indicating storage iron depletion. Despite these results, and the increasing incidence of male vegetarianism in Australia, most concern is typically given to women. In fact, there has only been one published Australian study investigating iron status of vegetarian males (3), and none on the adequacy of iron intake.

The aim of this study was to investigate the iron intake and status of Victorian male vegetarians aged between 20-50 years. A cross-sectional design was used for comparison of free living male vegetarians and age/sex matched omnivores. Thirty-nine ovo-lactovegetarians, ten vegans and twenty-five omnivores were recruited from the Melbourne metropolitan area. The three dietary groups did not differ significantly with respect to age, BMI, waist/hip ratio and blood pressure, however omnivores had a higher mean weight than ovo-lactovegetarians (mean \pm SD, 79.8 \pm 9.5 kg and 70.6 \pm 11.2 kg respectively, $p < 0.01$).

Each subject completed a 12-day semiquantitative dietary record from which iron intake was determined. Daily iron intakes of both the ovo-lactovegetarians and vegans were significantly higher than omnivores (mean \pm SD, 20.4 \pm 7.7 mg and 22.9 \pm 6.2 mg versus 15.8 \pm 4 mg, $p < 0.05$) with all three dietary groups having intakes well above the Australian RDI of 7 mg/day. Ovo-lactovegetarians and vegans obtained their iron exclusively from non-haem iron sources. Although the amount of iron consumed exceeded the RDI, the actual amount absorbed may be considerably lower than in the meat eaters, due to the low bioavailability of this iron form and some food components typically high in a vegetarian diet, that may inhibit non-haem iron absorption. In contrast, haem iron which is found exclusively in animal meats has a high bioavailability with an absorption efficiency of up to 15-25%.

Iron status was assessed by measurement of serum ferritin and haemoglobin concentrations. Ovo-lactovegetarians and vegans had significantly lower serum ferritin concentrations than omnivores (mean \pm SD, 64.1 \pm 46.9 ng/ml and 64.8 \pm 49.9 ng/ml versus 121.1 \pm 72.5 ng/ml, $p < 0.05$). Significantly more ovo-lactovegetarians and vegans than omnivores had serum ferritin concentrations below 20 ng/ml ($p < 0.05$) which may indicate the beginning of storage iron depletion, while a higher proportion of omnivores had concentrations above 200 ng/ml ($p < 0.05$) which has been suggested in one epidemiological study, to correspond to a two fold increased risk of acute myocardial infarction.

These results indicate, that despite Victorian male vegetarians having iron intakes higher than that of omnivores and above recommended levels, their iron status is significantly lower.

1. Alexander D, Ball MJ and Mann J. Nutrient intake and haematological status of vegetarians and age-sex matched omnivores. *Euro J Clin Nutr.* 1994; 48: 538-546.
2. Faber M, Gouws E, Spinnler-Benade AJ and Labadarios D. Anthropometric measurements, dietary intake and biomedical data of South African lacto-ovovegetarians. *Sth Afri Med J.* 1986; 69: 733-738.
3. Helman A and Darnton-Hill J. Vitamin and iron status in new vegetarians. *Am J Clin Nutr.* 1987; 45: 785-789.