Beating the blues—the association between fruit and vegetable intake and improved mood

Several recent studies have indicated that increased consumption of fruit and vegetables is associated with enhanced mood and psychological wellbeing and decreased depression.¹⁻³

Fruit and vegetables are rich in essential micronutrients, many of which have been associated with improved mood via a number of proposed mechanisms.⁴,⁵ Thus, it is plausible that increased consumption of micronutrient-rich fruit and vegetables might enhance mood, particularly in individuals with normally low dietary intakes.

Fruit and vegetables are particularly rich in vitamin C and β-carotene (pro-vitamin A) and circulating levels of these antioxidants have been shown to correlate with fruit and vegetable consumption.⁶

Vitamin C, being water soluble, is readily excreted and is an indicator for recent fruit and vegetable intake, whereas the lipid soluble carotenoids are retained by the body and are indicators for longer term fruit and vegetable intake. We have measured skin carotenoid status in several groups of individuals using a non-invasive biophotonic scanner. Scores of <10 to 25 indicate low fruit and vegetable consumption, scores of 25 to 35 moderate consumption and scores of 35 to 50+ indicate high consumption.

We screened a group of 134 young non-smoking males (primarily graduate students aged ~18-35 years) and found a mean skin carotenoid score of 28 ± 9. We also measured the skin carotenoid status of 24 laboratory personnel, both male and female (aged ~20-70 years) and found a mean score of 31 ± 9. There was no significant difference between men and women (P = 0.894) and their scores did not differ significantly from the group of male students (P = 0.238), even though the latter group are typically associated with less than ideal diets.

Of interest, however, we also measured 35 individuals who attended a Hauora Māori Day in Christchurch (2011). This group consisted of mixed genders, ages and ethnicity, although predominantly Māori. We found a skin carotenoid score of 24 ± 12, which was significantly lower than both the male students (P = 0.009) and laboratory personnel (P = 0.016).

Depressive disorders are a major health problem in New Zealand and appear to be more common in Māori than non-Māori.⁷ Circulating carotenoids have been associated with enhanced optimism and decreased depression.⁸,⁹ and are likely an indicator of overall fruit and vegetable intake.⁶

Consumption of fruit and vegetables is closely associated with socioeconomic status, with fruit and vegetable consumption decreasing with increasing neighbourhood deprivation.¹⁰ Key findings of the 2008/09 New Zealand Adult Nutrition Survey indicated that more than one third of New Zealanders consumed less than the then recommended five or more half-cup servings of fruit and vegetables per day.¹⁰
However, now that the USDA has updated its dietary intake recommendations to nine half-cup servings of fruit and vegetables for adults, significantly more members of the general public will be consuming less than the new recommendations. The new recommendations are significantly higher than the familiar five plus a day, and a difficult target for many people to meet.

Since younger age groups (i.e. 15–30 years) consume significantly less β-carotene-containing foods than older age groups,\(^*\) this suggests that they are the most appropriate target group for messages encouraging an increase in fruit and vegetable consumption, especially as a way to combat the increasing prevalence of depression and to improve overall mood.

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References: