

Reviewer's report

Title: Plasma micronutrient status is improved after a 3-month dietary intervention with 5 daily portions of fruits and vegetables: implications for optimal antioxidant levels

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Reviewer: Juan Sastre

Reviewer's report:

This manuscript shows that an increase in the intake of fruits and vegetables for three months leads to enhanced levels of certain antioxidants (vitamin C, lycopene, lutein, and carotenes), but does not affect markers of oxidative stress. The lack of effect on biomarkers of oxidative stress seems to be due to the high consumption of fruits and vegetables that exhibited the recruited population at the beginning of the study. This study helps to understand the effects of increasing fruit and vegetable intake and the limits of its effect on systemic oxidative stress. This work is of interest in the field, nevertheless this reviewer has the following comments as discretionary revisions:

- Regarding MDA measurement in plasma, it is recommended the use of EDTA-treated blood instead of heparinized blood to avoid an artificial increase in lipid peroxidation during sample processing. Nevertheless, the plasma MDA levels reported in the present manuscript are certainly low and consequently sample preparation seems adequate.
- The lack of effect of increasing fruits and vegetables intake on MDA levels might be due to the absence of changes in vitamin E levels, and this should be discussed. Indeed, Table 2 shows that alpha-tocopherol levels do not change significantly after improving the intake of fruits and vegetables.
- The lack of significant effect of increasing antioxidants on biomarkers of oxidative stress might be due to the high levels of antioxidants already present at the beginning of the study, but it should be considered in the discussion the hypothesis that in the short term it may be inefficient to increase antioxidant levels in a healthy population not subjected to any kind of pathological-related oxidative stress. However, this approach may be useful in the long term in order to prevent or diminish age-related chronic oxidative stress.
- There are some relevant reviews on this issue, such as those by Hamer and Chida (J. Hypertension 2007), Voutilainen et al. (Am. J. Clin. Nutr. 2006), Neuhouser (Nutr. Cancer 2004), and Martin et al. (J Nutr. Health Aging, 2002), which should be cited.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.