

Author's response to reviews

Title: Vitamin C in plasma is inversely related to blood pressure and change in blood pressure during the previous year in young Black and White women.

Authors:

Gladys Block (gblock@berkeley.edu)
Christopher D Jensen (cjensen@berkeley.edu)
Edward P Norkus (enorkus@olmhs.org)
Mark L Hudes (mlhudes@hotmail.com)
Patricia B Crawford (crawford@socrates.berkeley.edu)

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Author's response to reviews:

I apologize for the long delay in resubmitting this manuscript. I was unaware (and am very distressed) that the initial review had been received in December!!

I have addressed reviewers' comments and revised the manuscript accordingly.

I believe this could be an important paper. It indicates a very strong inverse association between blood pressure and vitamin C status, in a young population most of whom have not yet reached hypertension. I believe this could indicate a possible mechanism through which normal blood pressure could be maintained. It is supported by substantial biological rationale.

RESPONSES TO REVIEWERS' COMMENTS

Reviewer's report

Title: Ascorbic acid in plasma is inversely related to blood pressure and change in blood pressure during the previous year in young Black and White women.

Version: 1 Date: 7 December 2007

Reviewer: Mahshid Dehghan

Reviewer's report:

-Major Compulsory Revisions

Background

Last paragraph page 3. Plasma ascorbic acid is of interest as both a marker for consumption of a diet rich in fruit and vegetables. A recent meta-analysis (Dehghan et al. 2007) showed that only 25% of dietary intake can be explained by plasma vitamin C. Therefore, plasma ascorbic acid may not be a good biomarker of vitamin C intake by fruit and vegetable.

Response: We have removed the statement about ascorbic acid as a marker of fruit/vegetable intake. We were unable to find the meta-analysis the reviewer

mentions – the only Dehghan 2007 paper we found is not a meta-analysis. We agree that in a mixed population that includes smokers and vitamin supplement users, plasma ascorbic acid is not as good a marker for fruit/vegetable intake as are carotenoids. This is primarily because the intake of carotenoids other than through fruits/vegetables is low. However, we have shown in previous work (Block G, Mandel S, Helzlsouer K. Which plasma antioxidants are most related to fruit/vegetable consumption. *Am J Epidemiol* 2001;154:1113-1118.) that ascorbic acid is the biomarker most highly associated with fruit vegetable intake, if the disturbing influences of smoking and supplement use are removed.

Page 4 line 4. The word “absolute” can be deleted.

Response: We have removed it here and throughout the paper.

Method

Participants Page 5. line 8. It would be more informative to report the proportion (or number) of each group for non-respondent.

Response: We have added the total number of nonrespondents. Details for the subcategories are not available.

Data collection-Plasma ascorbic acid

Page 6 line 4. For how long and in what temperature blood was stored.

Response: We have revised to include this information.

Socioeconomic and lifestyle page 7. line 2. TV watching may not be a good proxy for physical inactivity. For instance, a person with a very active job who watches two hours TV at home is not the same as person with office job and watching less TV at home.

Response: That may be true, however it is the only physical-activity relevant variable in the dataset.

Dietary assessment page 7. line 3. Dietary records are measures of recent intake. To find association between BP and diet, long term dietary intake needs to be measured. If dietary record is used for measure of long term intake several measurements over a year are needed. (Willett W. 1998 Nutrition epidemiology, chapter 4).

Response: We agree that for many epidemiologic purposes, food frequency questionnaires might be preferable. However, three-day records are considered by some to be the gold standard, and three-day records were validated in this population. In any event, this was the only dietary measure in the dataset.

Result

Page 9. line 15. I found this sentence very confusing, please consider revision.

Response: We have revised this sentence.

Discussion

Page 11 line 3. this sentence needs to be revised.

Response: We have removed the reference in the sentence cited by the reviewer, and have added a some additional references.

Please add at least one paragraph to outline the limitation of the study.

Response: We had addressed limitations in several paragraphs on pages 10, 11 & 12. We have rewritten to make this more explicitly clear.

Page 23. Most of these variables are normally distributed and there is not need to report median for them. For those which are not normally distributed (e.g. Cigarettes and energy, fat and vitamin c intake) reporting Min, Max and Median (or quartiles) are necessary

Response: We have modified the table.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Reviewer's report

Title: Ascorbic acid in plasma is inversely related to blood pressure and change in blood pressure during the previous year in young Black and White women.

Version: 1 Date: 7 December 2007

Reviewer: Dexter Canoy

Reviewer's report:

General

This paper investigates the association between plasma ascorbic acid concentration in relation to blood pressure in young adult women (majority of whom were Black). The authors observed an inverse association between plasma acid concentration with concurrent blood pressure as well as with change in blood pressure the previous year. The paper is generally well-written, with the aims and methods clearly described, and conclusions supported by their findings and overall interpretation of results remained cautious.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

1. As the results are generally consistent with cross-sectional studies in adults, can the authors comment on the 'effect' size – 1) whether or not the magnitude of effect is different between younger and older adults, 2) whether or not the magnitude of effect are comparable/different between studies? Are associations in different studies showing dose-response curve?

Response: We have added information on the magnitude of changes seen in cross-sectional associations in older adults; on magnitude of the intervention effect seen in the DASH study; and a reference indicating dose response.

2. It would be helpful if the authors further assess the relevance of intake of fruits and vegetables (and/or all dietary sources of ascorbic acid), as well as supplement intake, in the association between plasma levels of ascorbic acid and blood pressure. Does the inverse association between plasma ascorbic acid and blood pressure persist even if we take supplementation in to account? How much of the plasma ascorbic acid levels are explained by 1) supplements, 2) fruit and vegetable intake, 3) all dietary sources of ascorbic acid? If the relevant variables are available, exploring these associations would give us a better insight as to the nature of the observed associations.

Response: Unfortunately the dietary data available to us did not differentiate vitamin C intake from foods and from supplements. However, we have added a paragraph describing how the ascorbic acid concentrations compare with those in representative national data, and we have pointed out that supplements have probably made a substantial contribution to the levels seen in the fourth quartile.

3. It would be helpful to include some error estimates (SE or 95% CI) in the text and figures.

Response: We have done so.

4. In showing results for 'change in blood' pressure, could the authors show what happens when change in weight during the 9th and 10th follow-up is accounted for in the model?

Response: Thank you for the suggestion. The results change very little, and remain statistically significant, for both systolic and diastolic. We have added this to the text in the Results section.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Discretionary Revisions (which the author can choose to ignore)

5. It would be helpful if the authors indicate how to convert plasma ascorbic acid units into SI units ($\mu\text{mol/L}$) in the methodology and/or add the SI units in parentheses or as a footnote in Table 1.

Response: Thank you. We have done so.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

