Reviewer's report

Title: Effects of olive oil and its minor phenolic constituents on obesity-induced cardiac disease

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Reviewer: roberta masella

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The paper “Olive oil and cardiac health in obesity” by Ebaid et al. addressed an interesting issue about the protective effects exerted on hearth in obesity by olive oil and specific olive oil phenolic compounds. This represents an innovative approach to a serious cause for concern such as the development of cardiovascular diseases associated with metabolic alterations and obesity, that is rapidly increasing worldwide. However, the general impression derived from reading the paper is of a quite descriptive work, with a substantially speculative discussion of the data collected.

Several aspects of the paper need to be improved and clarified.

Major compulsory revisions.

1 It is not clear how and in what concentration the olive oil and phenolic compounds were administered. The treatments were given by gavage twice a week, but the dose was given per day.

2 In addition, the modality of providing the compounds is neither chronic nor acute. Consequently, it would be necessary to monitor the concentration in plasma and urine of the principal polyphenols and/or metabolites (tyrosol and/or hydroxytyrosol, etc) at a certain time after a treatment and immediately before the following one.

3 Since polyphenol content and composition can be extremely various in different extra virgin olive oils, information should be given about the amount of total polyphenols contained in the EVOO used for the study, providing if possible the content of the principal component present in it.

4 The result section did not offer a clear understanding of the data obtained. It was quite difficult to follow the results reported, since they appeared merely a list, often confused. It would be also helpful for the reader to find more easily the rationale for the evaluation of the specific parameters and what the specific findings obtained can mean or suggest.

5 The discussion is in several parts quite speculative, and often the statements are unconvincing. In particular, the discussion and interpretation of data on oxidative stress, LH production and antioxidant enzymes, are not clearly understandable. The statement (p 10) that the decreased content of SOD in C-Cafeic rats was associated with a consumption of SOD to maintain myocardial LH levels seems in contrast with the data presented. C-cafeic rats in fact are the
only treated rat with level of LH as high as the control. In addition, generally speaking, polyphenols, due to their antioxidant activity, preserve antioxidant enzymes from consumption, and are able to enhance the expression and activity of antioxidant enzymes.

6 Finally, should be discussed the significant differences found among the effects of olive oil, oleuropein, and cafeic acid treatments.

**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 interest