Reviewer’s report

Title: The Antiplaque/Anticariogenic Efficacy of Salvadora persica (Miswak) Mouthrinse in Comparison to that of Chlorhexidine: A Systematic Review and Meta-analysis

Version: 0 Date: 24 Nov 2018

Reviewer: Zohaib Akram

Reviewer’s report:

The authors in this systematic review and meta-analysis assessed the ability of Salvadora persica mouthrinses to reduce plaque/cariogenic bacteria, in comparison to chlorhexidine and/or placebo rinses.

The authors concluded the use of Salvadora persica extract was associated with a significant reduction in the plaque score and cariogenic bacterial count. The authors also suggests his reduction was similar to that achieved with the gold standard, chlorhexidine mouthwash.

Introduction:

1) The introduction lacks a well-defined rationale. It should be based on the findings showed by the published data or the contradictory results demonstrated by the studies which the authors can find from the studies included in the systematic review.

In addition, the aim of the study should reflect the PICOS question.

Materials and Methods:

2) Registration of the systematic review is not a part of search strategy. PROSPERO should be reported under 'systematic review registration' in the methods.

3) The authors did not report how many assessors were involved in the search strategy using combination of keywords. How many keywords were medical subject headings? How many free text words?

4) No kappa statistics were applied for search strategy.

5) The search strategy is very old - December 2017. The authors also did not report the range of years for all the search.

6) Google scholar is not considered a reliable database amongst researchers. I encourage authors to make a new search strategy using EMBASE, Cochrane Central Register of Controlled Trials
and Cochrane Oral Health Group Trials Register presenting the total search hits for each database. This should consequently be reported in the PRISMA flow chart.

Eligibility criteria:

7) If the references of the remaining articles were reviewed manually, which journals were hand searched?

8) The eligibility criteria should also be according to PICOS. The authors no where reported about this important PRISMA guideline.

9) Only the inclusion of RCTs should be encouraged, especially when you have adequate number of clinical studies included in the systematic review. Inclusion of non-randomized studies makes the over all outcome weak.

10) I believe the data abstraction should be based on meticulous data extraction. See my comment below in results.

11) Although the quality of studies assessment is reported, how was the risk of bias from the included studies assessed? The risk of bias should have been estimated for each selected studies based on the Cochrane Handbook for Systematic Reviews of Interventions.

Statistical analysis:

12) I have a serious concern in this section of the study. Why did the authors choose to perform the Mantel-Haenszel method. If the overall outcome is the difference from the pre and post treatment from two different treatment modalities, rather than odds ration, weighted mean difference of outcomes and 95% CI is more appropriate statistical method for the current study.

Results:

Tables:

13) How did the authors come up with 151 results from PubMed?

14) How come there are 17 studies included for quantitative synthesis? Is it on the basis of separate treatment modalities, because I dont find 17 studies in the forest plots.

15) The result section does not focus much on the qualitative analysis such as mean SDs, caries parameters, clinical periodontal inflammatory parameters.

16) Despite of heterogeneity not being significant, the authors have applied random effect model. Please refer Borenstein et al 2010 and Hedges and Vevea, 1998.
17) Why not only high quality studies included in the quantitative analysis?

18) Data abstracted on the type of placebo/CHX are not in detail.

Discussion:

The discussion section is not focused. It should rather be based on the factual points inferred from the different included studies.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Unable to assess

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Acceptable

Declaration of competing interests
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?
3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

   If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

   I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal