

## ***Interactive comment on “Study on the antibacterial activity of selected natural herbs and their application in water treatment” by P. S. Harikumar and C. M. Manjusha***

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Abstract needs to draft again, especially from line 18-23, page 200. It has more qualitative statements. Please add some results in quantitative forms here?

(A) We have checked the efficiency of the herb within its genus level ie among *Ocimum* sp. (Tulsi varieties). The quantitative results have been added.

2. Lines 5-19, page 201. Most of the introductory material used here can be deleted as it breaks the continuity of the manuscript. The authors may say that investigation of antibacterial properties of natural herbs as an alternate to chemical treatment is the

C115

need of the hour to prevent DBPs formation.

(A) The corrections were made.

3. Line 16-18, page 201. The objective of the present work is lost somewhere. Its not clear that what the authors wish to discuss here, the alternative antimicrobial drugs for the treatment of infectious diseases from medicinal plants or antibacterial properties of natural herbs and their application in water treatment. I think, the authors should focus the later part only.

(A) The text has been edited accordingly.

4. Methodology, lines 20-25 page 201. Clarify the details of extract preparation with quantitative values. How much ml of extracted was derived from each herb and/or any water was added during extract preparation or so??

(A) The text has been edited to provide quantitative details.

5. Be consistent and use the similar abbreviation every time. Note line 15, page 202, *Serratia* sp., and *Bacillus* spp. The same has been repeated twice in lines 5-8 page 206. Is it deliberately or misspelled.

(A) The corrections were made.

6. Lines 23-25 page 202. A quantity of 15mL (3 teaspoons) of herbal extract was added to 100mL of water samples and was then subjected to bacteriological analysis. It means 15% solution of herbal extracts will definitely imparts the physic-chemical properties of drinking water especially color and taste which will further decrease the public acceptance. I feel, addition of plant extract from *Azadirachta indica* may give the bitter taste to the potable water. Authors should give the details in tables about the addition of different plant extracts and public acceptance.

(A) As you stated, there was a change in taste but many people accepted it as there was a decrease in the bacterial load. We have only introduced the most efficient herb

C116

in different households. As the percentage reduction of bacteria in *Azadirachta indica* is low it is quite certain that the public acceptance level will be less.

7. Lines 15-23 and 23-26 page 205. Very long sentences. Very difficult to understand the findings. Authors may support the text with the relevant tables here. (A) The percentage reduction values of bacterial load by different herbs are given in those lines. 8. Page 205-206 the authors found that the shelf life of *Ocimum sanctum* herbal extract was detected as 16 days. I wonder how the absorbance reduced to nearly zero on 16th day, however upto 15th day, it was more than 2 (figure 12). Under natural conditions, degradation is a continuous process. Please clarify or give supporting references.

(A) If the absorbance value of an herb is decreasing it may be attributed with its variation in life. Also as the absorbance was read at 650 nm, chlorophyll a content might have shown this variation. Continuous monitoring of absorbance was done using UV-Vis spectrophotometer. On 15th day the value was 2.99 but on the 16th and 17th day the reading was found to be zero. The life of the extract has stopped after the 15th day. The experiment was repeated for verification. Reference: (1) Anjali Basu, Debasri Mukherjee, Arnab K. Ghosh, Elina Mitra, Syed Benazir Firdaus, Debasree Ghosh, Kuladip Jana, Arun Bandyopadhyay, Aindrila Chattopadhyay and Debasish Bandyopadhyay., 2013. Melatonin augments the protective effects of aqueous leaf homogenate of Tulsi (*Ocimum sanctum* L.) against piroxicam-induced gastric ulceration in rats. *Asian Journal of Pharmaceutical and Clinical Research* 6 (2) : pp 123-132. (2) Devi Datt Joshi., 2012. *UV-Vis. Spectroscopy: Herbal Drugs and Fingerprints*, Springer India, pp 101-120.

9. Line 26-30, page 206. Please support your finding with relevant references.

(A) The percentage reduction values of the three varieties of *Ocimum* sp. are shown in the result and discussion part and also in figures. Reference: Shahedur Rahman, Rezuanul Islam, M Kamruzzaman, Khasrul Alam and Abu Hena Mastofa Jamal., 2011. *Ocimum sanctum* L.: A review of phytochemical and pharmacological profile.

C117

American Journal of Drug Discovery and Development pp:1-15.

10. Discussion part is completely missed in the manuscript. The authors have only reported the observation. They should support their finding with relevant literature.

(A) We have included the discussion part.

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Interactive comment on Drink. Water Eng. Sci. Discuss., 6, 199, 2013.

C118