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Comment

Interactive comment on “Optimizing the impact of temperature on bio-hydrogen production from food waste and its derivatives under no pH control using statistical modelling” by A. Sattar et al.

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We would like to thank Anonymous Referee #2 for the timely comments on the manuscript. Below are responses to your comments. Comment: Such studies can compare hydrogen production potential of tested waste but change in methodology raised some questions over such comparisons. So, the authors are well aware of this issue and designed the study to provide better comparison of food waste with rice waste as well as with newly focused noodle waste. The introduction part needs to address this issue and by citing the previous work, introduction part will clearly address this gap. The introduction part needs to address this issue and by citing the previous

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work, introduction part will clearly address this gap. Comparing the yield obtained in this study with previous work (in term of a table) will also be a good addition in this paper

Answer: The introduction part is updated to highlight this issue as “Keeping the same temperature but changing the initial pH from 7 to 8, the bio-hydrogen yield was changed from 64.48 mL/V_S to 55 ml/V_S under no pH control conditions (Lin et al., 2013b;Nathao et al., 2013). The same yield was increased to 70 mL/V_S when pH was manually controlled for food waste under thermophilic conditions, which represents the impact of pH management (Shin et al., 2004).” Table 3 is also added to compare the yields observed in some other similar studies

Comment: In abstract, line 8-9 need to be check, there are some typing mistakes regarding waste type and temperature condition mentioned

Answer: Thanks for indicating this mistake at our end, which was overlooked and rectified as “The maximum hydrogen yields of 82.47 mL/V_S, 131.38 mL/COD, and 44.90 mL/glucose were obtained from thermophilic food waste, thermophilic noodle waste and mesophilic rice waste, respectively”. Relevant corrections were also made in rest of manuscript.

Comment: Line 22-24, please explain the better understand term

Answer: Revised as “The statistical modelling returned good results with high values of coefficient of determination (R²) for each waste type and 3-D response surface plots developed by using models developed. These plots developing better understanding regarding the impact of temperature and incubation time on bio-hydrogen production trend, glucose consumption during incubation and Volatile fatty acids production.”

Comment: Introduction part, page 12825, line 5-6, 12-13 need revision for better representation

Answer: Revised as “. It has multiple advantages like 30-50 % reduction in waste volume as well as production of valuable by products such as methane and hydrogen (Lin et al., 2011).” And “Several studies represent increase in bio-hydrogen production from food waste due to addition of buffers and minerals”

Comment: In results and discussion part, page 12833, line 6-9 is a long sentence and may confuse the reader, so it is better to split them in two or more sentences.

Answer: Revised as “The increase in temperature from 37°C to 55°C increased 42.41% bio-hydrogen yield calculated on CODremoved basis for food waste. The increase in

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bio-hydrogen production due to same increase in temperature from 37°C to 55°C was 23.37%.” Comment: Page 12833 line 20, delete “a” before daily. Answer: Deleted
Comment: Page 12834 line 1, delete “was” and line 24 also need revision. Answer: Deleted and revised as “. During 48-72h, rate of utilization remained same as previous one but rank was slightly changed as FW>RW>NW. With an increase in temperature, during 24-72h, the rate of glucose utilization decreased for food waste but increased for noodle waste and for rice waste.”

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