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Sea grapes Kombucha Tea Improves Liver-Superoxide dismutase (SOD) Serum in Mice Fed on Cholesterol- and Fat-enriched Diet: A Novel Probiotic Ready-to-drink Rich in Ascorbic Acid

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Background/Objectives: Sea grapes (*Caulerpa racemosa*) are rich in macro-micronutrients, such as protein, minerals, folic acid, ascorbic acid (Vitamin C), vitamin A, vitamin B1, and fiber.⁽¹⁾ Kombucha tea is a synbiotic fermented beverage that has many health benefits which fermentation process increases antioxidant levels in food products.⁽²⁾ This study aims to evaluate the benefits of sea grapes kombucha tea, which include the amounts of vitamin C and its effect on Liver-Superoxide dismutase (SOD) serum in mice fed on cholesterol- and fat-enriched diet (CFED).

Methods: The Kombucha tea in this study used the formulation of the previous study.⁽³⁾ Vitamin C amounts were tested using the Titration-Iodometry method. Furthermore, 40 albino male (*Mus musculus*) mice weighing between 20–30 g were divided into four groups of ten each; group A as normal control (standard dry pellet diet), group B were fed CFED only, and C and D were fed CFED which given 150 and 300 mg/kgBW sea grapes kombucha tea (p.o.) for 4 weeks. This protocol has been registered at <https://preclinicaltrials.eu> (International Register of Preclinical Trials Protocols) PCTE0000258 and approved by the Ethics Committee RSUP Prof. Dr. RD. Kandou 100/EC/KEPK-KANDOU/VI/2021. Statistical analysis in this study used The One-Way Anova SPSS 26.0.

Results: Ascorbic acid amounts in this study kombucha tea was 1.45 ± 3.82 mg/mL. There was a significant difference in SOD levels between groups ($p < 0.0001$). SOD levels in group A, B, C, and D respectively 16.90 ± 2.82 U/mL; 8.79 ± 0.67 U/mL; 63.75 ± 4.55 U/mL and 80.27 ± 4.13 U/mL. Dosage of 300 mg/kgBW has significantly increased SOD activity ($p < 0.0001$) compared to 150 mg/kgBW.

Discussion / Conclusion: The sea grapes kombucha tea has the potential to be a ready-to-drink beverage to meet daily vitamin C needs and increase SOD-Liver (Intracellular antioxidant). This study showed in line with previous study that consumption of ascorbic acid significantly increased the SOD activity in type-2 diabetes patients.⁽⁴⁾ SOD plays a very important role as a defense against oxidative stress in the body.⁽⁵⁾ Sea grapes kombucha tea has the potential to be an anti-inflammatory functional food and as a good immunomodulatory agent, especially during the COVID-19 pandemic.

References

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Disclosure of Interest

None Declared