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Valorizations of Antioxidant and Antibacterial activities of selected plant-based fermented foods

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Recently, awareness of the many health benefits of consuming fermented foods has attracted many food industries and researchers to explore and manipulate fermentation variables in establishing fermentation process for the production of fermented foods with claimed health benefits. The health benefit of fermented foods includes ability to enhance immune system function, improve digestion process, lower blood pressure, antimicrobial activity, and antioxidant activity. Lactic acid bacteria metabolites have been reported to be involved in the improvement of human health by modulating the immune system of the consumer. Therefore, this study is carried out to develop fermentation process for plant-based fermented foods using appropriate starter culture and raw materials including garlic (Allium sativum), bitter beans (Parkia speciose) and spider flower (Cleome gynandra). The plant-based raw materials were fermented with several Lactic acid bacteria (LAB) strains to determine the suitable strains. In addition, the biological activities including antioxidant and antibacterial activities were evaluated using standard methods. Metabolomics profiling was carried out to determine the changes for the phytochemicals in the fermented samples using 1H NMR technique. The results demonstrated strong antibacterial and antioxidant activities for the fermented samples in comparison to the raw materials. Moreover, several bioactive phytochemicals were observed in the fermented samples and they showed correlation to the antioxidant and antibacterial activities. Plant-based raw materials fermented with the proper LAB strains have high potential to improve the consumer health due to their biological activities that can reduce the risk of non-communicable (NCD) diseases and infections.

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