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Biofermented okara is a potential nutraceutical: Evaluation of functional characteristics

Sulagna Gupta and Wei Ning Chen

Nanyang Technological University, Singapore

Okara is a by-product of the tofu and soymilk industry. With people consciously shifting to vegetarianism, veganism and lactose-free diets, this is one of the major agri-wastes presently generated in the world. Currently, it is either discarded in landfills or incinerated. In the quest for economical, environment-friendly methods to dispose agri-residues, reusing and recycling seem to be the answers. This study has attempted to re-enter okara back into the food chain after ameliorating its nutritional value. Fresh okara was biofermented using a food-grade GRAS microbe. The total phenolics content was analysed for fermented and unfermented samples. Additionally, the antioxidant potential was examined for both samples. Further, HepG2 (metastatic human liver carcinoma) cells were treated with antioxidant extracts from fermented and unfermented samples to compare antiproliferative activities. Biofermented okara was an improvement over fresh okara from all focussed aspects. Firstly, microbial activity contributed to an enhanced phenolics content. Since most phenolic compounds have antioxidant properties, different antioxidant analyses also showed an increase post fermentation. Lastly, the fermented okara extracts exhibited amplified antiproliferative activity on HepG2 cell line. The data evidenced the “functionality” of biofermented okara, thus validating the consideration that it as a potential functional food. Moreover, through valorization via biofermentation, this study involved recycling of a major food waste. Today, with plant and microbe derived bioactive compounds being in great demand, this work also opens up the possibility of upregulating the study for production of anti-cancer nutraceuticals from biofermented okara.

Biography

Sulagna Gupta is currently pursuing her PhD from Nanyang Technological University (NTU), Singapore. She is passionate about food waste management. Her interest lies in valorisation of food wastes. She is presently involved in examining therapeutic applications of valorised food wastes.

SULAGNA001@e.ntu.edu.sg

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