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Nutritional and sensory properties of traditional rice-based string hoppers incorporated edible green seaweed *Ulva fasciata*

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Seaweeds are comprised of several nutrients that make them beneficial to human health and nutrition. In Sri Lanka, seaweeds can be identified as underutilized marine plants. The purpose of this study was to assess the nutritional composition of locally available edible green seaweed *Ulva fasciata* and its potential to be used as a functional food ingredient to improve the nutritional and sensory properties of traditional rice (*Oryza sativa* L.) based string hoppers. String hoppers were prepared using white rice ("Suwandel") flour and red rice ("Weda Heenati") flour, which was substituted at 0% as control, 2.5% and 5% (w/w) with *U. fasciata* powder. Sensory evaluation was carried out to identify the best combination. A 5-point hedonic scale from "neither like nor dislike" to "like extremely" was used in sensory evaluation. Proximate analysis was performed for the accepted product. According to the proximate analysis, dried seaweed powder *U. fasciata* (moisture 11.81 ± 0.14%) contains, 17.12 ± 0.19% of total ash, 14.91 ± 0.26% of crude protein, 6.01 ± 0.64% of soluble protein, 0.41 ± 0.03% of crude lipid, 30.10 ± 1.30% of crude fiber and 26.89 ± 0.09% of total carbohydrate in dry weight basis. 2.5% (w/w) *U. fasciata* powder incorporated "Suwandel" rice string hoppers were scored as the best according to the sensory analysis. That sample was very well-liked for appearance, texture, smell, taste and overall acceptability when compared to other samples. Hence, the proximate and phytochemical studies were performed for the cooked 2.5% (w/w) *U. fasciata* added "Suwandel" string hoppers and control sample ("Suwandel" string hoppers). The proximate analysis revealed that the 2.5% (w/w) *U. fasciata* powder incorporated "Suwandel" rice string hoppers had a high percentage of total ash (1.73 ± 0.11%), crude protein (9.85 ± 0.17%), soluble protein (2.62 ± 0.24%) and crude fiber (21.46 ± 0.97%) as well as a lower amount of total carbohydrate (46.37 ± 0.31%) and crude lipid content (0.49 ± 0.06%) when compared to the control sample. The moisture content of cooked 2.5% (w/w) *U. fasciata* powder incorporated "Suwandel" string hoppers sample and control samples were 55.59 ± 0.49% and 54.07 ± 0.09%, respectively. The addition of that 2.5% (w/w) *U. fasciata* powder to "Suwandel" string hoppers significantly increased total phenolic and total flavonoid content. The results were expressed as 0.68 ± 0.10 µg GAE/mgml^{-1} and 0.12 ± 0.02 µg QE/mgml^{-1}, respectively. The study shows that the underutilized Sri Lankan *U. fasciata* has a high potential to be a functional food ingredient in rice-based string hoppers made with traditional rice variety "Suwandel".

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