

Influence of a ragi-soyabean combination on the viability of probiotic organisms during storage and under simulated gastrointestinal conditions

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Synbiotic food products in matrices other than dairy foods is needed to address the problem of lactose intolerance in certain segments of the population. In this study an attempt was made to develop a synbiotic food based on cereals, millets and legumes which comprise dietary staples in India. A nutritious combination of ragi-soybean (7:3) was found to be very effective in supporting growth of probiotic microorganisms. A 10% slurry was inoculated with a mixed culture of approx. 5 log cfu mL⁻¹ of *L. casei* (MTCC 1423), *L. plantarum* (MTCC 2621) and *L. fermentum* (MTCC 0903) and fermented at 37°C for 16 h. An increase in approx. 4 log cfu mL⁻¹ was achieved at the end of the fermentation period with an increased production of lactic acid (0.393 g %) and a decrease in pH (4.8) and viscosity (240 cP). The mixture was lyophilised with trehalose (1%) added as a cryoprotectant. The viability of the organisms during storage was studied at 5, 10, 15, 25 ± 2°C for a period of 8 weeks. The results showed that the viability of the organisms was best at 5°C. At other temperatures the viability was reduced as temperature of storage increased. The efficacy of the formulation in maintaining stability of the organisms during exposure to simulated gastrointestinal juices was studied. The results showed for the first time that ragi-soybean combination could provide a good medium for enhanced survival of the probiotic organisms and potential for development of a synbiotic product.

Biography

Minelly Rodrigues is a University Grants Commission (UGC) Junior Research Fellow at the Department of Foods, Nutrition and Dietetics of College of Home Science, Nirmala Niketan, Mumbai. She completed her M.Sc. in Foods, Nutrition and Dietetics in 2007 and is currently working on probiotic and synbiotic food formulations towards Ph.D. from University of Mumbai. The study is being carried out in collaboration with Food Technology Division, Bhabha Atomic Research Centre Mumbai.

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In vitro antioxidant and antidiabetic activity of different underground parts of taruls commonly available in Darjeeling Himalaya

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Different types of taruls are commonly used as vegetables by the local people of Darjeeling hills. These are underground plant parts which are generally consumed after boiling. Seven different species of edible taruls were analyzed for in vitro antioxidant capacity and antidiabetic activity and the secondary metabolites responsible for these activities. Experiments were also conducted to determine the effect of boiling by comparing the same with raw taruls. The free radical scavenging activities (IC₅₀ values) of methanolic extracts of taruls in descending order are as follows: ghar tarul > white sakar kanda > red sakar kanda > ban tarul > simal tarul > pindalu > squashjara. But squash jara extract showed highest metal chelating activity than others. α-glucosidase inhibitory activity was potential in ghar tarul, red sakar kanda and white sakar kanda (IC₅₀ values 11.04, 50.08 and 59.07 mg/ml FWT respectively). This study also involves the preliminary phytochemical screening of the methanolic crude extract of these taruls, revealed the presence of alkaloids, anthraquinones, amino acids, phytosterols, tannins, glycosides, cardiac glycosides, reducing sugar, resin and triterpene. Total phenol and flavonoid contents are highly correlated with free radical scavenging capacity as well as antidiabetic activity. It was also proved that the scavenging activity and bioactive phytochemical contents were reduced with boiling. Our findings suggested that the underground parts of these plants would be considered as functional food with potential source of antioxidant and antidiabetic components.

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