

Seaweed-supplemented bioactive yoghurt

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The nutritive potential due to presence of antioxidants, dietary fiber, essential amino acids, phytochemicals, vitamins and minerals along with their health promoting properties make seaweeds a promising option for inclusion in the human diet through supplementation in various food systems (Kumar et al., 2018).

Fucoidan, a fucose containing sulphated polysaccharide is mainly found in cell matrix of many brown seaweeds with a variety of health-benefitting biological functions including anticoagulant, antitumor, anti-thrombosis, antiviral, anti-oxidation, and immune-modulation. Thus, fucoidan is a potential functional ingredient for

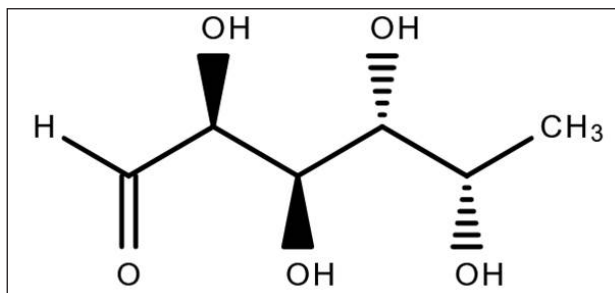


Fig. 1 Chemical structure of fucose

novel food products development (Hanjabam et al., 2019). The bioactivity of fucoidan depends upon sulphate and fucose content and an attempt was made to incorporate the fucoidan into the common dairy product yoghurt for utilizing health gains of fucoidan in a palatable manner. The fucoidan extracted as per Hanjabam et al. (2019) by ultra-sonication was utilized for present work. The yield (dry basis) of fucoidan was 14.6% and it had contained 23.7% fucose and 17.6% sulphate content.

The fucoidan incorporated healthy Yoghurt was prepared in collaboration with MILMA Products Dairy, Edappally, Ernakulam. Milk was thermized, standardized to required fat and solid non-fat levels and homogenized. The fucoidan powder along with sugar was admixed with milk. The admixture was pasteurized after the addition of pasteurized mango pulp. The mix was cooled and inoculated with thermophilic yoghurt culture comprising of *Lactobacillus delbrueckii* subsp. *bulgaricus* and *Streptococcus thermophilus*. The milk was agitated to uniformly disperse the yoghurt starter culture. The milk was filled in polystyrene cups and incubated at 42°C, until it attained the pH of 4.6. The yoghurt was cooled to 5°C before analysis. The proximate composition and anti-oxidant activities of seaweed supplemented yoghurt are presented in Table 1. The yoghurt samples were liked 'very much- extremely' on 9-point Hedonic scale, by sensory panelists.



Fig.2 Seaweed supplemented yoghurt

The incorporation of fucoidan helped in improving the nutritional attributes of the yoghurt without adversely affecting the organoleptic qualities. The shelf life of seaweed supplemented yoghurt was observed to be 15 days at 5°C. Seaweed

Table 1. Physico-chemical properties of seaweed-supplemented yoghurt

Parameter	Value
Moisture	77.2%
Fat	3.2%
Protein	3.9%
Ash	0.2%
Carbohydrate	15.5%
Hunter color parameters	
	L* 67.2
	a* 2.8
	b* 13.6
pH	4.6
acidity	0.8%
DPPH Activity	80.2%
Metal chelating activity	67.2%
Reducing power	0.5

supplemented yoghurt is a unique attempt to utilize the salubrious seaweed along with goodness of yoghurt. Usage of fucoidan as health

promoting ingredient is well justified considering its health beneficial aspects. The functional benefits of seaweed can be utilized in human diet using yoghurt as supplementation vehicle.

References

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Molecular detection of antibiotic resistance genes in multidrug resistant *Listeria monocytogenes* isolated from fish retail markets

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Listeria monocytogenes is a ubiquitous pathogen with an ability to contaminate a variety of foods during pre- and/or post-processing (Olaimat et al., 2018). Due to its ability to resist wide environmental conditions such as pH (4.7 to 9.2), high salinity (10% NaCl) and temperature (0.5 to 45°C), *L. monocytogenes* is recognized

as significant food safety hazard, especially in ready-to-eat (RTE) foods. Owing to its high mortality rate (20 to 30%) and hospitalization rates of *Listeria* infection, the Food and Drug Administration of the United States implemented zero tolerance approach for *L. monocytogenes* in all the RTE foods (Hitchins, 1998). This