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Microbial hydrocolloids in all-purpose flour for lesser uptake of oils in traditional Indian fried food

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Fried foods in India have a unique cultural identity and are an essential part of our food culture. India as a country is witness to a huge transformation from a land of scarcity into land of plenty. Economic affluence and technological boom have claimed its first casualty in the youth – "unhealthy and untimely eating habits leading sedentary lifestyle". Today's tendency in utilization of edible ready-to-eat products with reduced or low fat content and food containing functional ingredients is more critical than before. In food, natural polymers encompass a range of proteins and polysaccharides that are widely used in a variety of industrial applications to perform several functions. It includes gelling of hydrophilic solutions, stabilizers in foams, emulsions and dispersions at the same time inhibiting frost and crystal formation. The study is an attempt to reduce the adverse impact on the health following consumption of fried foods, by making certain modifications in the physico-chemical characteristics of fried foods by using microbial hydrocolloids. By incorporating the all-purpose flour, we can thereby reduce the uptake of oil to a considerable extent while deep frying using palm oil and refined sunflower oil and thereby make this traditional food healthier. The present work deals with the effective use of such natural polymers as a direct incorporation to the ready-to-eat fried stuff (Samosas) and optimizes the physiochemical parameters of the product. The all-purpose flour with the microbial hydrocolloids was fried in fresh oils and with multiple smoked oil of various grades and analyzed. The standard product was made with proper standardization and the trials were done on the mixture with hydrocolloids (Gellan and Pullulan) separately in various proportion as (T110:90), (10:20), (T910:10) respectively. By the results of proximate, the protein content was found to be comparatively higher as that of the standard. Dietary fiber content was found to be less in the tests and the moisture content was higher from trial T 6 to T 9. More the ratio of hydrocolloids in the formulation, lesser was the oil absorption. The reduction in the absorption level was observed to be 9%–10% of total oil content in the product. GC-MS was carried out to show the organic group present. Sensorial analysis of the product and the trials were done with 9 point hedonic scale with semi trained panel lists. Viscosity of the pre smoked oil and after smoked oil was analyzed for oil absorption. It was observed that the viscosity was found to be higher in pre smoked oil compared to the other. The absorption rate was observed to be higher in multiple smoked oiled trails than in freshly smoked oiled trail. Frying dynamic study and flour dynamic study (for both all-purpose and hydrocolloid) were carried out and texture analysis was studied. Thus, by reducing the total oil content than the original product, incorporation of microbial polysaccharides (Gellan and Pullulan will eventually be a suitable alternative to health conscious consumers.

Biography

Dr G Nandhini Devi is an Associate Professor in Centre for Food Technology, Dept of Bio-Technology, Anna University, Chennai, India. She has more than 12 years of experience in teaching, research and evaluation. Her area of expertise is in the field of Food Bio-process Technology and Environmental Bio-technology.

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