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Production and quality assessment of antioxidant-rich biscuits produced from pearl millet and orange peel flour blends

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The unstable free radicals' molecules oxidize cells throughout the body to cause oxidative stress, which has been implicated in the pathogenesis of many chronic diseases. Thus, consuming antioxidant-rich snacks could help reduce the production of these free radicals in the body. This study aimed to produce antioxidant–rich biscuit from an underutilized pearl millet and agricultural waste from orange peel flour (PMF and OPF, respectively) blends. Biscuits were produced from PMF and OPF blends using various proportions (95:05; 90:10; 85:15; 80:20 with 100% PMF as control. The functional properties of the flours, antioxidant properties, physical evaluation, and consumer acceptability of the biscuits were evaluated. The functional properties of the composite flour showed an increase in oil absorption capacity (7.73-8.80 g/ml), water absorption capacity (6.82-7.21 g/ml), foaming (3.91-5.88 g/ml), and emulsification (52.85-58.82 g/ml) properties. The increased addition of OPF significantly ($p<0.05$) increased the antioxidant properties of the biscuits produced from the composite flour. For instance, the ferric-reducing properties (0.10-0.4 mgAAE/g), total flavonoid (1.20-8.12 mg QE/g) and ABTS radical scavenging (1.17-2.19 mmol/TEAC/g) of the composite flours were increasingly comparable to those of 100% PMF. The physical parameters of the biscuit were significantly different ($p<0.05$) from one another The addition of OPF into PMF reduced the weight, diameter, and spread ratio of biscuits produced while contrarily increasing the height of the biscuit. The incorporation of OPF at 5% (95:05) substitution yielded a consumedly acceptable biscuit product. The significant increase in antioxidant properties with an increase in OPF during the production of biscuit would therefore increase the nutritional value and potential health benefits.

Biography

Dr. Oloniyo, Rebecca Olajumoke obtained her PhD from the Department of Food Science and Technology, Federal University of Technology, Akure, Nigeria with specialization in Food Processing and Product Development of Functional Food and Nutraceuticals. She works with Prince Abubakar Audu University, Nigeria as a Lecturer in the Department of Food, Nutrition and Home Science. In quest of her academic pursuit, she has attended Academic Training, Workshops, and International Conferences where most of her research findings were presented. She has over thirteen (13) published research articles in international peer-reviewed Journals while some are under review. She is a professional member of The Nigerian Institute of Food Science and Technology (NIFST); Member of the Organization for Women in Science for the Developing World (OWSD); and Member of Functional Foods and Nutraceuticals Association of Nigeria (FF&NAN). I aim to be a future career leader, notable researcher, and zealous about solving health-related issues

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