2550 - Impact of Different Drying Methods on Nutritional Characteristics of Carrot, Sweet Potato, and Moringa Leaf Powder and the Production of Noodles

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The increasing consumer demand for nutritious fast foods, particularly noodles, has necessitated the investigation of alternative ingredients. Therefore, this study focused on producing nutrient-enriched noodles. The objective of this research was categorized into two; 1. investigate the impact of different drying methods such as freeze drying (FD), cabinet drying (CD), microwave drying (MD), and oven drying (OD) on the nutritional characteristics of sweet potato, carrot, and moringa leaf powders, and 2. the selection of the optimal drying method and the development of nutritious noodles using selected dried powders. The MD was optimal for sweet potato (moisture content- 5.13±0.12%, ash- 3.59±0.08%, crude protein 3.5±0.25%, crude fat 0.35±0.04%, crude fiber 10.66±0.27%, total phenolic content (TPC) 67.58±7.39 mg gallic acid equivalent / 100g (mg GAE/100g), and total flavonoid content (TFC) 2.88±0.55 mg quercetin equivalent (mg QE/100g)). The CD was optimal for carrot powder (8.59±0.22% moisture, 2.64±0.13% ash, 8.17±0.53% crude protein, 6.02±0.52% crude fat, 7.25±0.32% crude fiber, 63.68±1.36 mg GAE/100g TPC, and 3.53±0.5 mg QE/100g TFC), whereas the FD was optimal for moringa leaf powder (5.49± 0.27% moisture, 9.67±0.20% ash, 27.42±0.39% crude protein, 5.93±0.07% crude fat, 8.16±0.68% crude fiber, 97.28±3.41 mg GAE/100g TPC, and 7.69±2.28 mg QE/100g TFC). The noodles were then formulated by incorporating optimal dried sweet potato, carrot, and moringa leaf powders in various ratios. Among, the most promising noodle formulation was comprised of 90% sweet potato powder, 5% carrot powder and 5% moringa leaf powder according to nutritional (12.2±0.53% moisture, 4.53±0.04% ash, 10.28±0.22% crude protein, 1.02±0.06% crude fat, 3.6±0.35% crude fiber, 59.21±1.85% mg GAE/100g TPC and 10.95±0.32% mg QE/100g TFC) and cooking properties (optimum cooking time- 2.4±0.26 min, cooking yield- 298.37±14.26%, swelling index- 323.31±28.31%, cooking loss- 4.19±0.79% and water absorption capacity- 1.98±0.14 g/g). Overall, this study demonstrated the potential of incorporating sweet potato, carrot, and moringa leaf powders into noodles to develop a nutrient-enriched food product.

Keywords: Carrot powder, Drying methods, Moringa powder, Nutrient-enriched noodles, Sweet potato powder

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