

The Effect of Different Thickening Agent on The Physicochemical Properties of Gluten-Free Pasta Made Using Tiger Nuts

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Structured Abstract

Background: The food industry is very interested in tiger nuts, a plant tuber that is endemic to Mediterranean coastal regions and rich in minerals, lipids, carbs and starches. The growing demand for nutritious and palatable gluten-free alternatives has led to interest in using tiger nuts to enhance the nutritional value of gluten-free noodles due to their superior nutrient content. However, the influence of various thickening agents on the physicochemical properties of these gluten-free noodles made from tiger nuts remains inadequately understood. This study investigates the effect of different thickening agents on the physicochemical properties of gluten-free pasta made using tiger nut flour.

Methods: Five formulations were prepared: a control with 100% wheat flour, and four gluten-free variations with tiger nut flour in combinations of 80:20 and 60:40 with either corn flour or tapioca flour. The study measured cooking quality, encompassing the rate of water absorption and cooking loss, and conducted nutritional analysis, which included moisture, ash, fat, and fiber content, alongside assessments of color, texture, and sensory properties.

Results: The results showed that higher ratios of tiger nut flour increased moisture, fiber, fat, and ash content significantly enhancing the nutritional profile of the noodles. The choice of thickening agent significantly influenced the color and texture, with corn flour contributing to a lighter color and better sensory attributes. The different proportion of thickening agent significantly differ in terms of cooking quality, nutritional analysis and sensory evaluation. However, it does not affect the texture and color of the pasta significantly.

Conclusion: In conclusion, formulation F2, with 60% tiger nuts and 40% corn flour, emerged as the optimal formulation of gluten-free pasta made using tiger nuts compared to other experimental formulations (F1, F3, and F4). F2 improves the overall physicochemical properties of gluten-free pasta, indicating a balanced option that offers good sensory properties and overall acceptability.

Keywords: Tiger Nuts, Gluten-free, Thickening Agent, Pasta

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