EFFECT OF B-GLUCAN ADDITION ON MICROBIOLOGICAL QUALITY AND STABILITY OF VEGAN SAUCE

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Background: The growing demand for plant-based foods has stimulated the development of vegan sauces with improved stability and safety characteristics. This trend is driven by increasing consumer awareness of health, sustainability, and the environmental impact of food production. Nevertheless, the formulation of vegan sauces remains a technological challenge because the exclusion of egg-based ingredients may reduce emulsion stability and affect product quality. In this context, β-glucans have gained attention as promising functional ingredients due to their thickening, water-binding, and stabilizing properties. Their incorporation into vegan sauces may contribute not only to improved structural stability but also to enhanced microbiological quality and overall product acceptability.
Aim of the study: The study aimed to evaluate the effect of β-glucan concentrations as fat-replacing and stabilizing agents of vegan sauces.
Materials and methods: Three experimental samples containing different β-glucan levels were prepared and compared with a control sample without β-glucans. The physicochemical properties of the developed sauces were evaluated by determining dry matter content, moisture, pH, total acidity, ash content, viscosity, and organoleptic characteristics. In addition, microbiological analysis and emulsion stability assessment were carried out to evaluate the safety and shelf-life potential of the developed formulations.
Results: The results showed that increasing β-glucan concentration led to an increase in dry matter content and viscosity, while moisture content slightly decreased. The pH values remained within acceptable limits for microbiological safety, and all samples demonstrated satisfactory microbiological quality without exceeding permissible limits. Emulsion stability improved with increasing β-glucan concentration, indicating the structural role of β-glucans in stabilizing the dispersed system.
Overall, the findings confirm that β-glucans can effectively contribute to improving the stability and microbiological safety of vegan sauces. Their incorporation positively influenced the structural properties of the emulsified system and supported the maintenance of acceptable quality parameters. In addition, the microbiological results indicated that the developed formulations remained within satisfactory safety limits, which is essential for the production of plant-based sauces.
Conclusions: These results demonstrate that β-glucans can serve not only as texture-modifying agents, but also as valuable functional ingredients in vegan food formulations. Therefore, the obtained data support the use of β-glucans for the development of stable, safe, and nutritionally enhanced plant-based sauces.

Keywords: β-glucans; vegan sauce; emulsion stability; microbiological quality

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