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Laboratory Guide: Processing of Fruits and Vegetable Products with Application of Food Additives

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Introduction

Functional foods offer additional health benefits beyond their primary nutritional value. They are typically enriched with specific nutrients, additives, or bioactive compounds that have been shown to affect health positively. These foods promote optimal health and, when included in a healthy diet, assist in lowering the risk of chronic diseases. Developing functional foods involves a multi-step process that includes research, formulation, testing, production, and marketing. The development of functional foodsis centered on the thoughtful addition of bioactive ingredients and molecules that have the potential to improve flavor, nutrition, and health-promoting qualities. Inspired by the functional food paradigm, this practical project intends to clarify the fundamentals of food processing and the strategic use of additives to create novel, nutrient-dense, and delicious snacks. Fruits and vegetables are sources of various bioactive compounds, natural compounds with specific health-promoting effects beyond essential nutrition. Among these are vitamins, linked to health advantages such as less oxidative stress and enhanced cardiovascular health (Drewnowski & Almiron-Roig, 2010; Giampieri et al., 2012; Liu, 2003). In addition, studies on the use of seasonings and additives have shown how important they are to improving the overall flavor and consumer acceptance of functional meals (Hayes & Keast, 2011; Tuorila et al., 2008).In this lab experiment, we create and evaluate functional fruit and vegetable chips based on scientific principles and informed by empirical data to close the gap between scientific understanding and culinary artistry. The processing of fruits and vegetable products often involves various steps, including cleaning, cutting, blanching, cooking, preserving, and packaging, where food additives are substances added to food during processing to improve or maintain its safety, quality, texture, flavor, or shelf-life.

Objectives:

- Gain practical experience in food processing techniques related to making fruit and vegetable chips.
- Undertand the role of additives and ingredients in enhancing the flavor and nutritional value of food products.
- Evaluate the impact of different seasonings and additives on taste, texture, and overall chip quality.

DISCUSSION

Properties of Papaya Chips

Papaya chips are known for their sweet and tropical flavor. The sensory evaluation is presented above to assess the quality of papaya chips. Using the hedonic scale, our group and classmates tasted and evaluated the papaya chips on various sensory attributes, including taste, texture, aroma, and appearance. The result states that the taste of Papaya chips is exquisite and scored five (5) on the sensory scale. In contrast, the aroma is likely very much because it smells fruity and enticing. The texture of the papaya will become drier and more brittle. It is transformed from fresh papaya's soft and juicy texture to a crispy or leathery texture, scoring five (5) on the hedonic scale.

Properties of 'Alugbati' (Malabar Spinach) Leaves Chips

Malabar Spinach, also known as alugbati leaves was used to obtain alugbati chips. The sensory evaluation is presented using the hedonic scale. The result appears that the taste of the chips is very good since it gained a score of 4 in the sensory scale, but the appearance was not that desirable as it scored 3 on the hedonic scale. While the aroma was liked extremely by everyone, and the texture is like very much because it is also crispy, that isthe ideal texture of a chip.The cooking procedure of alugbati chips considerably impacts the dish's quality and effectiveness. By rapidly dehydrating the leaves and batter, boosting the Maillard reaction, and minimizing oil absorption, a high frying temperature aids in crispiness. A shorter frying time keeps the alugbati leaves' vivid green color while producing a crunchy texture. Longer frying times may result in severe dehydration, so striking a balance is critical. The combination of high heat and sufficient frying time effectively eliminates moisture from the leaves and batter, contributing to the crispiness of the chips. Water loss is critical to obtain a nice texture without totally drying out the leaves. The Maillard reaction, which is affected by temperature and time, improves the flavor and aroma of the chips. Consistent frying ensuresthat the chips are evenly crispy. Experimentation and close observation of the cooking process might aid in achieving the desired result.

CONCLUSION

The Carica papaya, also known as papaya fruit, and Alugbati, also known as Malabar spinach, is a good option as a raw material used to make chips. The presented work demonstrated the methods and their outcome in creating chips, which are made up of raw materials assigned to us. Additionally, these chips have added some seasonings or additives that would add flavor and balance to their taste.Adding olive oil, vinegar, and salt to the spinach was done, while in the papaya, there were no additives due to its natural flavor.They were supported by baking them in a preheated oven at 200°F or 95°C with the exact time needed to achieve perfect crispy chips. Overall, the papaya and spinach have achieved a good outcome, explicitly being chips supported by doing a sensory evaluation that would tell the chip's rating if it is good or not.