

EFFECT OF HYPOSODIC SALT ON SENSORY AND PHYSICAL PROPERTIES OF "POLVILHO" SNACKS

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The reasons for using salt in food can be divided into three broad categories; processing, sensory (taste) and preservation. Regarding sensory effects, salt not only confers its own specific flavor on products, but also is used to enhance and modify the flavor of other ingredients. The salt effect on flavor is affected by both chemical and physical nature of its ingredients, their granulometry, and the composition of ingredients used. However, high sodium daily intake can increase blood pressure and the risk for heart disease and stroke, which boosted governmental strategies for reducing the sodium content in processed foods as part of a set of actions to decrease the intake of this nutrient in Brazil from the current 12 g to less than 5 g of salt (2,000 mg sodium) per person/day up to 2020. The aim of this study was evaluate the effect of three different low-sodium salt formulations on sensory and physical properties of snacks compared to traditional salt (NaCl). Snacks were made with "polvilho azedo" (cassava starch obtained from the natural fermentation of freshly extracted cassava starch submitted to a natural or convection drying), soybean oil, water, eggs and salt. The low-sodium salts were formulated varying levels of sodium chloride, potassium chloride and L-ornitine. Snacks were evaluated on flavor, texture and global acceptability by 100 consumers through 9-point hedonic scale; sodium, potassium and chloride content; hue angle, texture (crispness and hardness), paste viscosity, apparent density and scanning electron microscopy (SEM) measurements. Consumers preferred ($p < 0.05$) snacks prepared with traditional salt, although all the products presented global acceptance scores corresponding to like moderately/slightly (7.16 to 6.21). The minimum content of L-ornitine used conferred to snack higher scores of flavor and global acceptability than only sodium chloride and potassium chloride mixture. Texture had higher acceptance scores (7.73 to 7.21) than others attributes and decreased directly with chloride content of snacks. The L-ornitine addition and reduction of organic salt (sodium and potassium chloride) percentage in low-sodium mixtures caused the decrease of puncture force (hardness) and crispness work, while the apparent density was increased, that could be associated with higher proteic component and its plasticizing effect, also observed at SEM images. There was significant ($p < 0.05$) increase of maximum cold viscosity according to reduction of sodium content of snacks, since low sodium content leads to less solvation by water. The hue value varied from 83.8 to 87.3, showing different ($p < 0.05$) color between low-sodium snacks and traditional salt. The results showed that L-ornitine could act as flavor enhancer in low-sodium mixtures of sodium chloride and potassium chloride. The NaCl substitution reduced up to approximately 63% in sodium content of snacks and affected their physical texture and color properties, despite this fact has not affected the good acceptance scores by consumers.

Keywords: low-sodium; consumers' acceptance; crispness, paste viscosity, scanning electron microscopy, hue