

IUFOST2006/208 Development of nutritious baked bean and rice chips

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Common beans (*Phaseolus vulgaris*) have been part of the human diet for millennia and traditionally have been consumed whole or as mashed bean paste. This legume is an important source of nutrients and growing evidence suggests it can be considered a functional food, but today it's consumption is declining. Alternative bean products may be needed to increase bean utilization, however few exist on the market. The objective of this study was to develop a baked bean and rice chip with good nutritional properties.

Initially the concept of bean and rice chips was analyzed. Twenty-seven potential consumers (13 men and 24 women between 16 and 40 years-old) were interviewed about their perceptions and opinions concerning bean products in an exploratory study. Afterwards, ten different formulations were evaluated for consumer acceptance, the variables tested were different concentrations of condiments and additives used to obtain a crisp product. Formulations were presented in a random and balanced way to a 100 persons group who evaluated products for acceptability with a 15 cm hedonic scale. Data were analyzed by ANOVA and LSD tests. The most accepted formulation was analyzed for fat, fiber, protein and folic acid content.

The exploratory study with potential consumers indicated several aspects such as flavoring, appearance, crispness, shape, fat content, shelf life, and price should be considered in the chip product development. This study also indicated the main negative aspect was the bean and rice chip being an unknown product. However, the group visualized it as being very innovative, highly nutritious and with good marketing potential.

Results from acceptability tests showed two main clusters of people with different preferences. The first cluster (46 persons) gave higher acceptance scores to the products than the second cluster (54 persons). Overall, one product received high acceptance scores from both clusters.

Chemical analysis of the most accepted formulation showed the developed bean and rice snack can be considered a low fat and high fiber product, since a 30 g portion contains 1,7 g fat and 5,6 g dietary fiber. Protein content per portion is 4,2 g, and it also supplies 10% of daily recommended folic acid intake.

Baked bean and rice chips have good marketing potential as a nutritious, low fat and high fiber snack.

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