Promoting dietary chemoprevention through development of a functional food product

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Abstract

The aim of this study was to evaluate consumer acceptability of a yellow-dusted sweet potato crisp prototype. Preference and acceptability of the prototype was compared to a commercial product using various tests, namely Hedonics, Food Action Rating Scale (FACT), and Paired-Comparison. Thirty-two male and female subjects (Mean age of 22.8 years) were recruited at California State University, Long Beach. Consumer acceptability utilizing a 9-point Hedonic Scale (1 = “Dislike Extremely”, 9 = “Like Extremely”) was significantly (P < 0.05) higher for the prototype compared to commercial product on appearance (84%), color (58%), flavor (88%), aroma (53%), texture (94%), and overall acceptability (7.65 ± 0.225; 4.90 ± 0.383). Frequency measures the difference in preference between products. Table 1. Mean value results for the prototype are significantly lower than the commercial product on all attributes except color.

Methodology

Prototype Development

Ingredients were obtained from a local farmers market in Long Beach, CA. Equipment from the Food Science Laboratory on campus was used.

Production process as follows:
- Dehydration: 52° C / 125° F for 120 minutes
- Baking: 177° C / 350° F for 10 minutes.
- Dimensions of each sweet potato chip: about 1.5” – 2.0” (inches) in diameter and 1/8” in thickness

Consumer Preference and Acceptability

Sensory evaluation of the prototype was performed using the following tests:

9 point Hedonic Scale
- Measures food acceptability
- Measures food acceptability by frequency of consumption
- Measures the difference in preference between products

9 point Food Action Rating Scale (FACT)
- Assess sensory attribute
- Food Action Rating Scale (FACT) Ranking Test
- Paired-Comparison tests
- Paired-Comparison tests

Subject Recruitment/Screening

32 participants (6 male and 26 female) were recruited from California State University, Long Beach (CSULB) in Long Beach, CA.

Development of the Principal Display Panel and Nutrition Facts Label

The prototype packaging was created to meet the standard criteria for sustainable food: local and community based, fair, and ecologically sound (Real Food Challenge 2015).

Results

Acceptability, Preference & FACT Results

The prototype performed significantly lower than the commercial product on nearly all attributes:
- Hedonics ratings
- Food Action Rating Scale (FACT), and
- Paired-Comparison tests

The prototype was “Liked Moderately” on appearance, color, and aroma.

Practical Application

- Emphasis on the synergistic benefits in relation to the chemopreventive compounds and the presence of natural sugars in this product may improve its overall acceptability.
- Promotion of this and other similar natural snack products on the market may potentially redirect snack behaviors toward more healthy choices.

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Select References