

DEVELOPMENT AND CHARACTERIZATION OF SALTY COOKIE SNACK TYPE FORMULATED WITH BARU BY-PRODUCTS (*Dipteryx alata* Vog.)

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Abstract

The aim of this study was to develop and characterize salty cookies snacks using baru (*Dipteryx alata* Vog.) oil and partially defatted baru almond flour as baru almond by-products.

Key words:

Baru, fatty acids, total fiber.

Introduction

Almond baru (*Dipteryx alata* Vog.) presents high amount of dietary fiber, unsaturated fatty acids and minerals. So the aim of this study was to develop and to characterize salty *snacks* with functional claim, replacing the original ingredients by baru oil and partially defatted almond baru flour.

Results and Discussion

Chemical composition of baru almond, partially defatted baru flour and *snacks* according to AOCS, (2009), and total fiber (TF) by PROSCKY et al. (1984).

Fatty acid composition of baru oil were determined by gas chromatography (HARTMAN and LAGO, 1973).

Mineral composition of almond, partially defatted baru flour and *snacks* were determined by elemental microanalysis by Scanning Electron Microscopy (SEM) and Energy Dispersive System (EDS) (GOLDSTEIN and NEWBURY, 1992).

Breaking strength of the salty *snacks* was analysed using a texturometer TA-XT Plus (JORGE, RODRIGUEZ and HOMBRE, 1999).

Development of *snacks*: Formulation 1: 20% substitution of wheat flour by partially defatted baru flour and 40% of extra virgin olive oil by baru oil; Formulation 2: 80% substitution of wheat flour by partially defatted baru flour and 85% of extra virgin olive oil by baru oil.

Chart 1. Chemical composition of a serving size (30g) of the salty *snacks* and percentage of adequacy in relation to the Recommended Daily Value (% DV).

Nutrients by serving size	Formulation 1 ^a	%DV ^b	Formulation 2 ^a	%DV ^b
Moisture	4.40g	-	3.73g	-
Ash	0.66g	-	0.80g	-
Carbohydrate	10.67g	3.28	5.60g	1.72
Proteins	4.30g	5.73	5.26g	7.01
Lipids	6.58g	14.62	9.52g	21.16
FAT	3.39g	13.56	5.09g	20.36
Energetic value	105.55kcal	5.28	108.76kcal	5.44

^aValue expressed on a dry basis; ^bGuia alimentar para a população a brasileira (2008)

- Salty *snacks* could be considered a food with high fiber content, as they present more than 6g of TF/100g (BRASIL, 2012).

Chart 2. Fatty acid profile of the baru almond (%).

Fatty acid	Baru almond oil (%)
C18:1 (oleic) – ω 9	48.26 \pm 0.04
C18:2 (linoleic) – ω 6	25.59 \pm 0.03
C18:3 (linolenic) – ω 3	0.15 \pm 0.01
Total unsaturated fatty acids	76.37
MUFA	50.63
PUFA	25.74

- Minerals concentration in a serving size of salty *snacks* were similar in the Formulation 1 and 2, especially potassium (68.88mg), phosphorus (51.36mg), copper (59.53mg), zinc (44.20mg) and calcium (28.24mg).

- The salty *snacks* presented a break force of 1,2N (Formulation 1) and 0.4N (Formulation 2).

Conclusions

- The high oleic fatty acid content (ω 9) in *snacks*, associated with high levels of TF can support the increase in HDL-c levels and reduce LDL-c levels when consumed as part of a balanced diet.

- The use of oil and partially defatted baru flour in different products can collaborate to reducing waste and adding nutritional value to food. Moreover it can also contribute to the sustainable development of native areas in Brazil like Cerrado.

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