



VALORIZATION OF THE AVOCADO SEED FOR THE FORMULATION OF FUNCTIONAL FOODS

Nataly Rodríguez¹ • Lumara Parra¹ * • María Hernández-Carrión¹

¹Universidad de los Andes, Chemical and food engineering Department, Grupo de Diseño de Productos y Procesos (GDPP), Bogotá, Colombia

*ls.parras@uniandes.edu.co

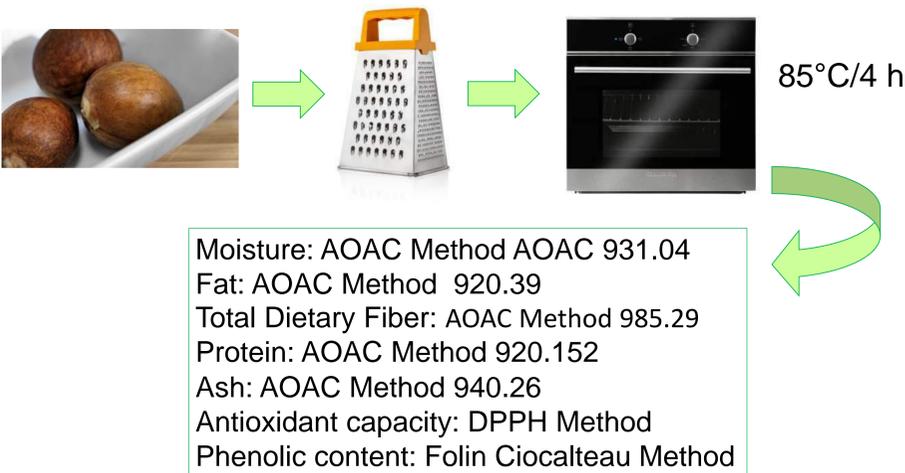
Introduction

Currently, avocado by-products, such as the skin and the seed, are not used since they are believed to have few industrial uses. These by-products are considered organic waste that can have an environmental impact if not handled properly. For its part, the seed, despite being thought as by-product, it has nutritional characteristics similar to those of the pulp, which makes it a striking raw material to be used in the food industry.

Objective

The aim of this study was to evaluate the nutritional composition of the flour obtained from Hass avocado seeds in order to formulate cookies that were analyzed by a consumer panel

Methodology



Wheat flour: 0-28%, w/w
Avocado seed flour: 9-37%, w/w
Brown sugar: 23%, w/w
Oat flour: 18%, w/w
Unsalted butter: 21%, w/w
Egg: 13.5%, w/w
Baking powder: 1%, w/w

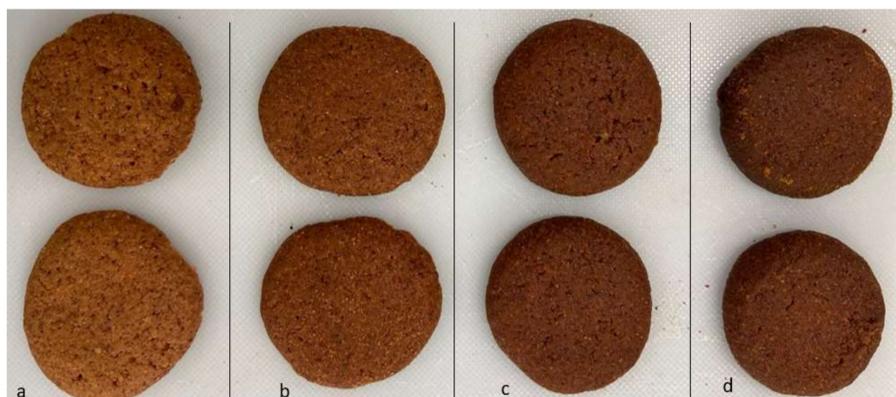


Figure 1. Cookies with a) 25% b) 50% c) 75% d) 100% substitution of wheat flour for avocado seed flour

Results

Nutritional and functional composition

Table 1. Nutritional composition and functional properties of avocado seed flour.

Parameter	Average
Moisture %	45.16 (0.09)
Fat %	27.73 (0.15)
Total dietary Fiber %	23.66 (0.05)
Protein %	1.57 (0.33)
Ash %	0.99 (0.41)
Antioxidant Capacity (µg Trolox Equivalent/ g sample)	185.45 (0.67)
Phenolic Content (mg of gallic acid equivalent per g of flour)	6.3 (0.29)

The values in parentheses are the standard deviation.

Sensory analysis

50 participants

Table 2. Means for appearance, color, texture and acceptability of cookies with 25%, 50%, 75% and 100% substitution of wheat flour for avocado seed flour.

	Appearance	Color	Texture	Global
Cookie 25%	8,0 ^a (0,9)	8,0 ^a (0,9)	7,9 ^a (0,9)	7,9 ^a (0,9)
Cookie 50%	7,3 ^a (0,9)	7,3 ^{ab} (1,4)	7,4 ^{ab} (1,0)	6,7 ^b (1,1)
Cookie 75%	7,3 ^a (0,9)	7,2 ^{ab} (1,4)	6,9 ^b (1,7)	6,7 ^b (1,4)
Cookie 100%	7,5 ^a (0,9)	7,5 ^a (1,5)	7,1 ^b (1,0)	6,5 ^b (1,2)

Values in a column with a different letter are significantly different ($p < 0.05$) according to Tukey's test. The values in parentheses are the standard deviation.

Discussion

- After the analysis of the flour, it was confirmed that avocado seed flour had an important nutritional and functional content, thus it was incorporated in the design of functional cookies.
- The sensory analysis indicated that the cookie most accepted by the consumer panel in terms of appearance, color, texture, and crispness was the cookie with a 25% substitution of wheat flour for avocado seed flour

Conclusions

Results suggest that the flour obtained from the Hass avocado seed has a wide potential to be used as a partial substitute for wheat flour due to its high nutritional value and high overall acceptability by consumers.

