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EVALUATION OF NUTRITIONAL COMPOSITION AND TOTAL POLYPHENOLS CONTENT IN AVOCADO SEED (*Persea americana*)

Anghel Iasmina - Mădălina¹, Boleanțu Anamaria - Bianca², Lazăr Cătălin - Andrei²,
Popescu Georgeta – Sofia², Velciov Ariana – Bianca^{2*}

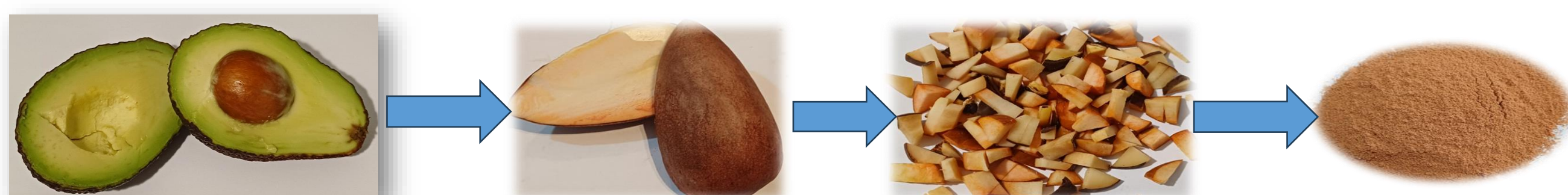
¹*Politehnica University of Timisoara, Materials and Manufacturing Engineering
Department, 300222, Timisoara, Romania*

²*University of Life Sciences "King Michael I" from Timisoara, 300645, Romania*

Abstract The aim of this study was to obtain and nutritionally characterize avocado seed powder, as well as to determine its total phenolic content, with a view to its potential use as a food additive or as a material for active packaging with antioxidant properties. Results (% DM) showed values ranging from 11.31–14.42 moisture, 2.11–3.42 ash, 4.37–5.32 protein, 11.10–12.31 fat, 3.96–6.64 crude fiber, 51.81–55.82 carbohydrates, and 28.62–31.58 mg GAE/g DM for total phenolic content (TPC). These values confirm that avocado seed powder is a valuable source of nutritional and bioactive compounds, with potential applications as a functional ingredient or as a base material for biodegradable and active food packaging.

• Introduction

The avocado seed (*Persea americana*), considered a by-product of pulp processing, contains a wide range of bioactive compounds and essential nutrients. It is rich in proteins, lipids, minerals, vitamins, polysaccharides, and various bioactive substances such as phenols, flavonoids, and condensed tannins, which are attributed with anti-inflammatory, antimicrobial, hypoglycemic, and antioxidant properties. The composition of avocado seeds is influenced by a series of factors such as the variety and cultivation techniques, geographical origin, stage of fruit ripening, analysis methods, etc.



• Materials

To achieve the proposed objective, avocados purchased from three local stores were used. The avocado seed samples (P1, P2, P3) were washed with distilled water, cut into small pieces, dried at 50°C, grounded, and subsequently analyzed for nutritional parameters determination.

• Methods:

Standardized analytical methods recommended by AOAC (2000), were applied to determine physico – chemical and nutritional parameters, including moisture, ash, protein, fat, crude fiber, and carbohydrates. The total polyphenol content was evaluated using the Folin–Ciocalteu method.

• Conclusions

□ The results confirm that avocado seeds represent a significant matrix of essential nutrients and bioactive constituents, thereby underscoring their applicability as functional ingredients in food and nutraceutical formulations.

□ The determined values are in line with the data from the literature, supporting the relevance of this plant resource for obtaining products with high functional value or as a base material for biodegradable and active food packaging.

□ The valorization of this resource also contributes to reducing waste generated from avocado fruit processing.

• Results and discussions

Table 1. Nutritional composition (% DM) and total polyphenol contents (mg GAE/100g DM) of avocado seed

Samples	Moisture	Ash	Protein	Fat	Crude fibre	CHO	TPC
P1	14.42± 0.36	2.11± 0.19	4.37± 0.25	11.10± 0.37	6.64± 0.27	51.81± 1.45	28.62 ± 0.58
P2	11.31± 0.32	3.42± 0.22	5.32± 0.27	12.31± 0.50	3.96± 0.28	55.82± 1.76	31.58± 0.54
P3	12.92± 0.37	2.81± 0.21	4.88± 0.29	11.87± 0.46	5.38± 0.26	53.31± 1.97	30.76 ± 0.51

The nutritional parameters of avocado seeds (Table 1) reveal moderate variations among samples P1, P2, and P3, influenced by the source of the avocado fruits.

□ Moisture content falls within optimal limits, ensuring product stability, preventing microbiological degradation, and maintaining sensory qualities during storage.

□ Ash content reflects the presence of essential minerals, which contribute to the nutritional value and support key physiological functions.

□ Protein levels provide an adequate nutritional contribution, complementing the overall macronutrient profile.

□ The lipid fraction is rich in beneficial unsaturated fatty acids and shows stability against oxidation, thereby maintaining consistent product quality.

□ Crude fiber promotes digestive health and supports metabolic balance, while carbohydrates (CHO) provide an important source of energy.

□ The high total polyphenol content (TPC) indicates substantial antioxidant activity, which contributes to cellular protection and enhances overall product stability.