



Enzymatic activities of different pumpkin cultivars from Algeria

Saher, Liza ^{1*}, Bachari, Khaldoun¹, Ziani, Borhane E.C.¹, Barros, Lillian ^{2,3}
¹Scientific and Technical Research Center in Physico-Chemical Analysis CRAPC, 42004, Tipaza, Algeria, ²Instituto Politécnico de Bragança IPB, 5300-253, Bragança, Portugal, ³Centro de Investigação de Montanha CIMO, 5300-253, Bragança, Portugal
 Email* : saherliza@hotmail.com

Introduction

Pumpkin fruits are widely appreciated and consumed worldwide. In addition to their balanced nutritional profile, pumpkin species also present valuable bioactive compounds that confer biological and pharmacological properties to them. However, the seeds, peels and fibrous strands resulting from pumpkin processing are still poorly explored by the food industry. The current study used those fruit components from the genotypes of pumpkin that are economically significant in Algeria to produce bioactive extracts.



Material et Methods

The enzymatic inhibition activity of dry samples was performed on three raw cultivars that are popular in Algeria: V1 *Cucurbita maxima* (Gold nugget Pumpkin), V2 *Cucurbita moschata* (Butternut Squash), and V3 *Cucurbita moschata* (Musquée de Provençal Squash), by using various fruit parts (peel, pulp, fibers, and seeds). The enzymatic inhibition activities were evaluated by two methods: α -amylase inhibition and antibrowning assay.

Results and Discussion

The enzymatic inhibition activity are evaluated for the different pumpkin extracts, is expressed in IC₅₀ (inhibitory concentration 50).

Table 1: Enzymatic activities (IC 50 %) of the different pumpkin cultivars from Algeria.

Samples		V1. <i>Cucurbita maxima</i> (Gold nugget Pumpkin)			
		Peel	Pulp	Fibers	Seeds
α -amylase inhibition		>400	>400	>400	246.45±48.90
	Antibrowning assay	>400	>400	>400	>400
	POD inhibition	>400	>400	>400	>400
	PPO inhibition	>400	>400	>400	>400
Samples		V2. <i>Cucurbita moschata</i> (butternut squash)			
		Peel	Pulp	Fibers	Seeds
α -amylase inhibition		>400	>400	>400	114.41 ± 13.52
	Antibrowning assay	>400	>400	>400	>400
	POD inhibition	>400	>400	>400	>400
	PPO inhibition	>400	>400	>400	>400
Samples		V3. <i>Cucurbita moschata</i> (musquée de provence squash)			
		Peel	Pulp	Fibers	Seeds
α -amylase inhibition		>400	>400	>400	388.87 ± 45.63
	Antibrowning assay	>400	>400	>400	>400
	POD inhibition	>400	>400	>400	>400
	PPO inhibition	>400	>400	>400	>400

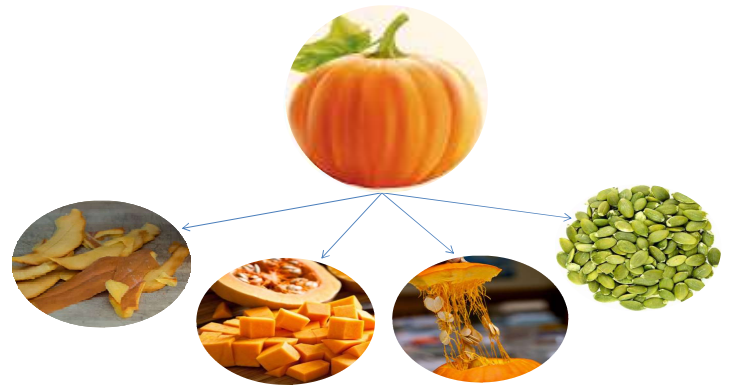


Figure 1: Different pumpkin parts.

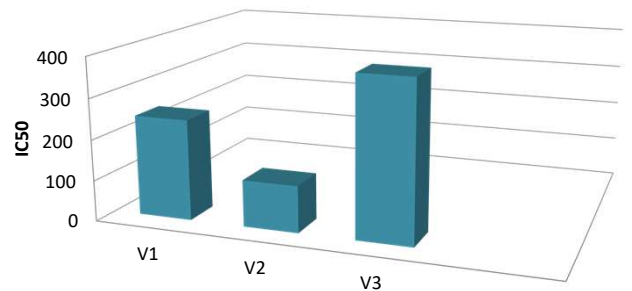


Figure 2: α -amylase inhibition in seeds of the different pumpkin cultivars from Algeria.

Conclusion and Perspectives

The results showed considerable differences in the enzymatic inhibition activities amongst the cultivars and the fruit parts. The internal part of the pumpkin fruit (seeds) is the one that revealed the lowest IC₅₀ and the *Cucurbita moschata* (butternut squash) cultivar is the best in terms of the recorded activities.

References

Leichtweis, M., Molina, A., Pires, T., Inês, M., Calhelha, R., Bachari, K., Ziani, B., E.C., Oliveira, M., Pereira, C., Barros, L. (2022). Biological Activity of Pumpkin Byproducts: Antimicrobial and Antioxidant Properties. *Molecules*, 27. 8366. 10.3390/molecules27238366.