



# Total Phenolic, Vitamin-C Content and Antioxidant Activity of Peel and Flesh of Abiu (*Pouteria caimito*)

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## ABSTRACT



Abiu (*Pouteria caimito*) is a tropical fruit native to South America. This fruit is gaining popularity in Thailand, particularly in the northern and northeastern regions, where it is widely cultivated and sold. Abiu is rich in essential vitamins and minerals, including vitamin C, fatty acids, and antioxidants, which help reduce the risk of various diseases and promote overall health. This research aims to compare the total phenolic content using Folin-Ciocalteu reagent, antioxidant activity using the DPPH radical scavenging method, and vitamin C content using the redox-titration technique of the flesh and peel of Abiu at two ripeness stages: half-ripe (greenish-yellow fruit) and fully ripe (yellow fruit). It was found that ethanol extract of the peel had a higher total phenolic content than the flesh at both ripeness stages. However, the ethanol extract of fully ripe flesh had the highest antioxidant activity ( $IC_{50} = 105.40 \mu\text{g/mL}$ ) and vitamin C (4.96mg/mL) compared to the half-ripe flesh and the peel of both ripeness stages. This finding suggest that, the high total phenolic content in Abiu peel extract may have potential applications in health and cosmetic products. Additionally, the fully ripe flesh is more suitable for consumption than that of half-ripe stage due to its higher antioxidants and vitamin C content, providing greater nutritional benefits.

## INTRODUCTION

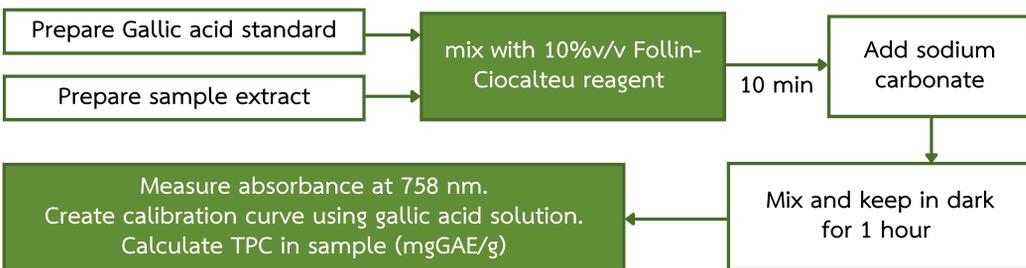
Antioxidants are bioactive compounds that are essential for human health, by neutralizing free radicals that contribute to cellular damage and diseases. These compounds are distributed in various foods, including vegetables and fruits. Abiu (*Pouteria caimito*), a tropical fruit belonging to the Sapotaceae family and native to South America, is recognized for its high antioxidants in both its flesh and peel. This study evaluates the total phenolic content of Abiu extracts using Folin-Ciocalteu method, antioxidant activity using the DPPH radical scavenging assay, and vitamin C content by redox-titration.

## METHODOLOGY

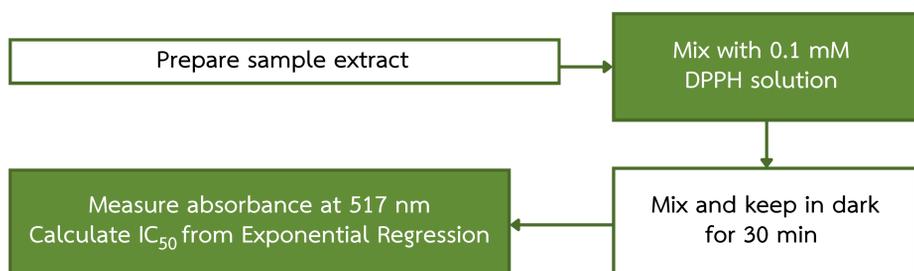
### Extraction



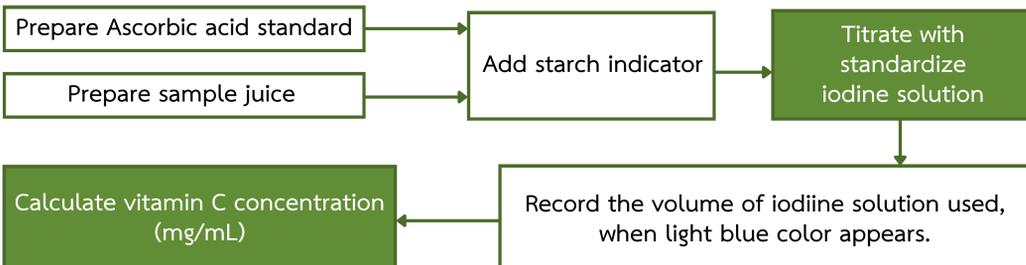
### Total phenolic content (TPC) by Folin-Ciocalteu method



### Antioxidant activity by DPPH assay



### Vitamin-C concentration by Redox-titration



## RESULT

sample extract	TPC (mgGAE/g)	DPPH $IC_{50}$ (g/mL)	Vitamin C (mg/mL)
fully ripe flesh	0.8665	105.39	4.96
fully ripe peel	2.2375	1098.57	1.83
half ripe flesh	0.6355	529.01	3.42
half ripe peel	2.100	3557.73	0.58

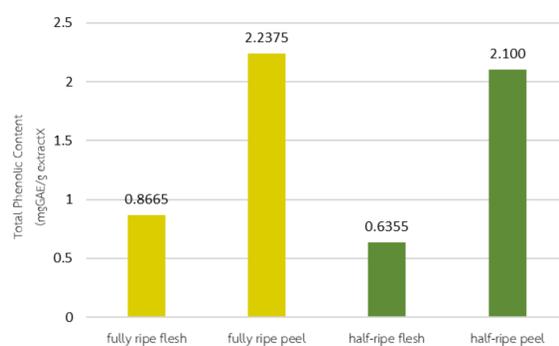


Fig.1 Total Phenolic content in ethanolic extracts from flesh and peel of Abiu at two ripeness stages: half-ripe (greenish-yellow fruit) and fully ripe (yellow fruit).



Fig.2 Example of Follin-Ciocalteu reagent reaction, reagents turn color from yellow to blue.



Fig.3 Example of DPPH radical scavenging Reaction, reagents turn purple to yellow.

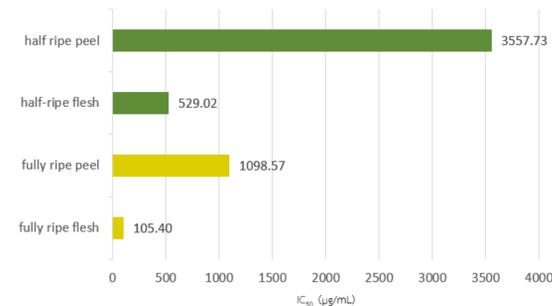


Fig.4  $IC_{50}$  value in ethanolic extracts from flesh and peel of Abiu at two ripeness stages: half-ripe (greenish-yellow fruit) and fully ripe (yellow fruit).

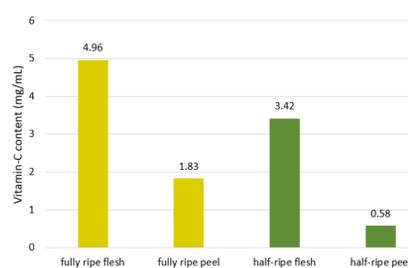


Fig.5 Vitamin C concentration Determination by Iodine titration (Redox-titration) of flesh and peel of Abiu juice at two ripeness stages.

## CONCLUSION

Abiu's peel had a higher total phenolic content than the flesh at both ripeness stages. Fully ripe flesh had the highest antioxidant activity, followed by half-ripe flesh, fully ripe peel and half-ripe peel. Abiu's flesh had a higher total phenolic content than the peel at both ripeness stages. It was found that fully ripe stage had higher total phenolic content, antioxidant activity and vitamin C than half-ripe stage. Fully ripe flesh Abiu is the most suitable for consumption due to its highest antioxidant activity and vitamin C. The high phenolic content, particularly in the peel, provides antioxidant properties that could be offered valuable nutritional and cosmetic benefits.

## ACKNOWLEDGEMENT

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## REFERENCE

Saravia, M., Santosf, R. C., Chagasa, P. C., & Ednalva, D. D. S. (2018). Evaluation of total phenolic compounds and antioxidant activity in amazon fruit. CHEMICAL ENGINEERING, 64, 649-654.