

Evaluation Of Anti-Aging Efficacy of Ethanolic Extract of Custard Apple (*Annona Squamosa*) Peel

Priyadharshini M¹, Revathi Nayagam R²

¹Post Graduate Student, Department of Biochemistry, Valliammal College for Women, E-9 Annanagar East, Chennai 600102. Tamilnadu, India.

²Assistant Professor, Department of Biochemistry, Valliammal College for Women, E-9 Annanagar East, Chennai 600102. Tamilnadu, India.

Abstract—The present study aims to the evaluation of anti-aging efficacy of ethanolic extract of custard apple (*Annona squamosa*) peel. The main objective is to prove Assessment of in vitro wound healing activity and Exfoliating effect analysis through anti-tyrosinase activity.

I. INTRODUCTION

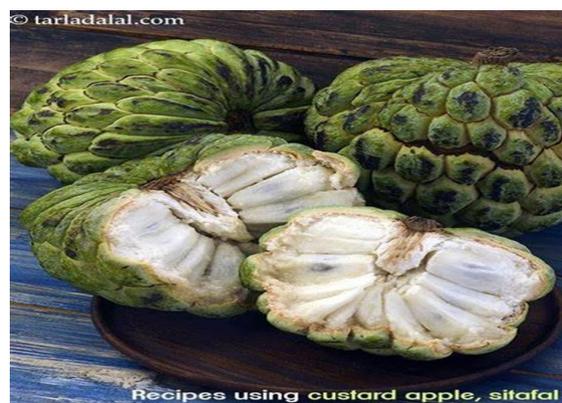
The custard apple (*Annona squamosa*) is a tropical fruit known for its sweet and creamy pulp. While the fruit is widely consumed, its peel is often discarded as waste. It has a high potential value due to its rich content of natural compounds.

The custard apple peel has bioactive compounds and their potential applications as antioxidant, antimicrobial, flavoring and coloring agent. In this study, the custard apple peel was extracted to analyze phytochemical screening, quantification, antioxidant activity, anti-inflammatory and anti-aging efficacy through tyrosinase inhibition assay.

POTENTIAL BENEFITS:

The potential benefits that are present in the custard apple peel are:

1. Antioxidant properties
2. Anti-cancer properties
3. Anti-inflammatory properties.



BOTANICAL DESCRIPTION:

The custard apple plant's real name is *Annona squamosa*. It belongs to the Annonaceae family, and in India, it is also called Sitaphal. This small tree loves warm, tropical places and is quite popular in countries like India, Brazil, and even Egypt! It can't stand frost, so it prefers places where the sun shines bright.

Kingdom:	Plantae
Clade:	Tracheophytes
Clade:	Angiosperms
Clade:	Magnoliids
Order:	Magnoliales
Family:	Annonaceae
Subfamily:	Annonoideae
Tribe:	Annoneae
Genus:	<i>Annona</i>

II. MATERIALS AND METHODS

Sample preparation:

The custard apple peel were removed separately dried at room temperature in uncovered recipients, grounded to fine powder and dried again.

Extraction process:

A type of maceration was used for the extraction preparation. After grinding into fine powder, place it in

a clean container.

50% ethanol is poured on the top of the sample material, soaked and kept for a short period of time to extract the bioactive constituents that are readily soluble.

Samples were filtered with grade 1 whatman filter paper. 0.7% extract was prepared using 50% ethanol, stored and utilized for further analysis.

III. RESULTS

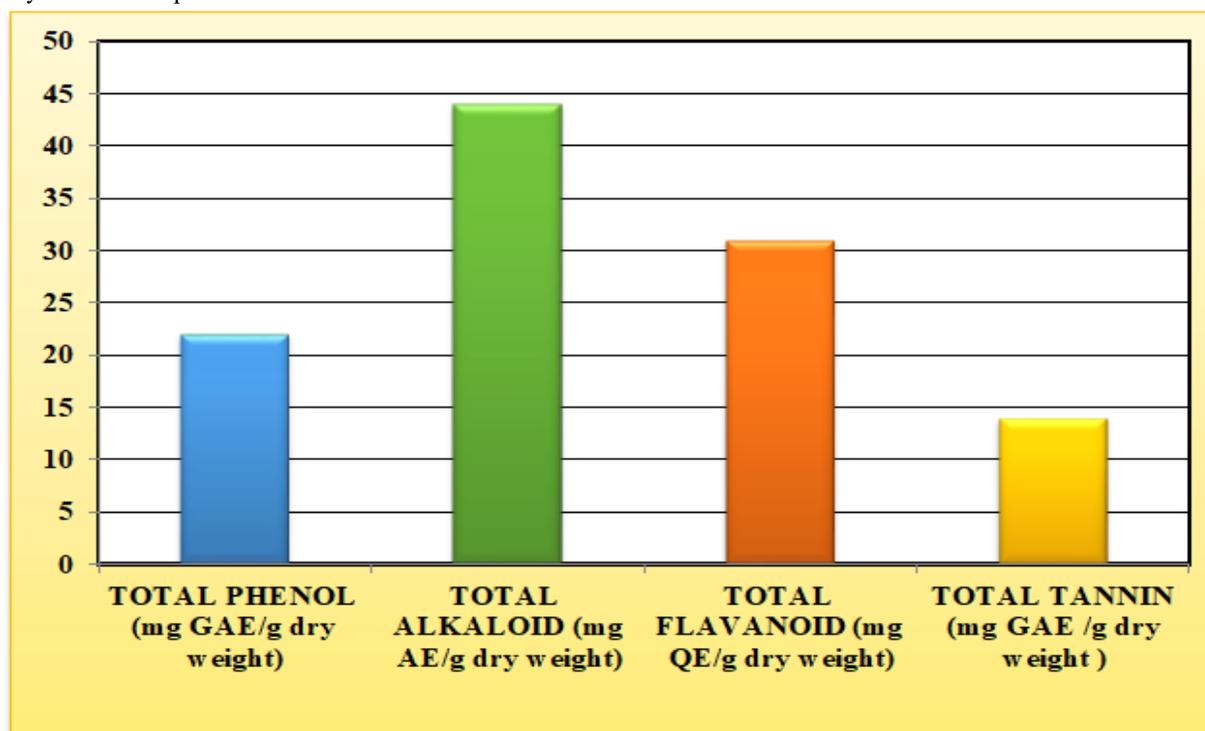
Phytochemical screening:

S.NO	EXPERIMENTS	INFERENCES
1	Test for alkaloids	Present
2	Test for amino acid	Absent
3	Test for carbohydrates - Molisch's Test	Present
4	Test for carbohydrates - Benedict's Test	Present
5	Test for carbohydrates - Fehling's Test	Present
6	Test for phenols	Present
7	Test for flavonoids - Con. HCl	Present
8	Test for sterols	Present
9	Test for proteins	Absent
10	Test for Diterpenoids	Absent
11	Test for Gum and mucilages	Absent
12	Test for Tannins	Present
13	Test for Quinones	Absent
14	Test for Glycosides	Absent

The table represent the phytochemical screening of ethanolic extract of custard apple peel shows the presence of alkaloids, carbohydrates, flavonoids, sterols and tannins.

1. Alkaloids :- reddish - brown precipitate
2. Carbohydrates – Molisch's :- violet ring
3. Carbohydrates – Benedict's – green coloured precipitate
4. Carbohydrates – Fehling's – red precipitate
5. Phenols – dark green colour
6. Flavonoids – red colour
7. Sterols – red colour in lower layer
8. Tannins – formation of emulsion

Phytochemical quantification:

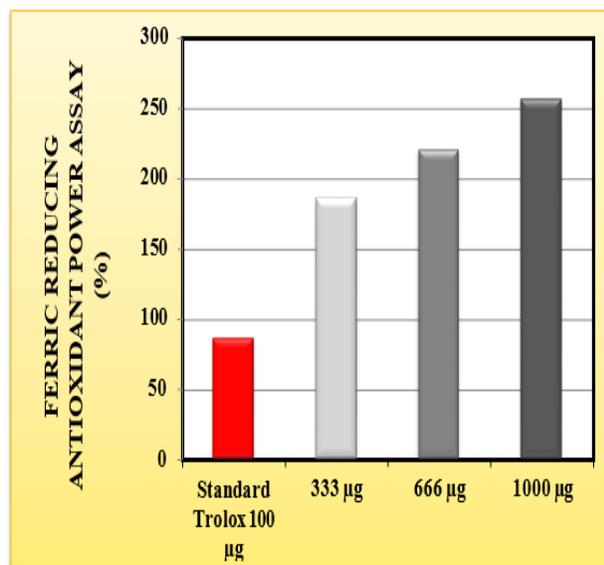


The graph shows the varying concentration of alkaloids, tannins, flavonoids and phenols in ethanolic extract of *Annona squamosa* peel.

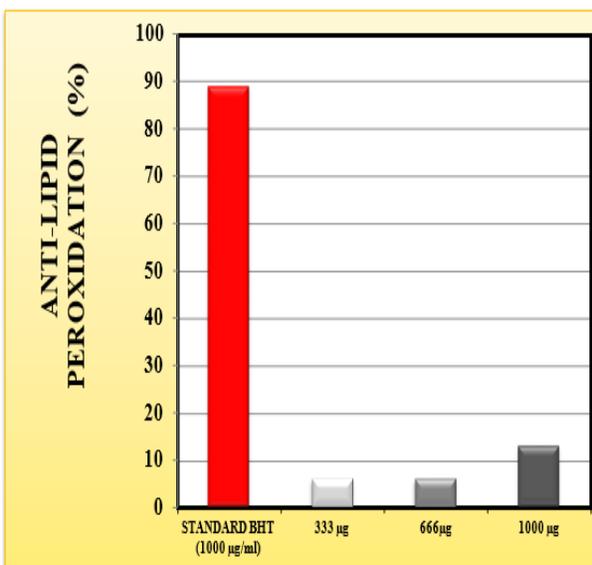
When compared to tannins and phenols, Alkaloids and flavonoids have high concentration.

ANTI-OXIDANT ACTIVITY

A. FRAP:

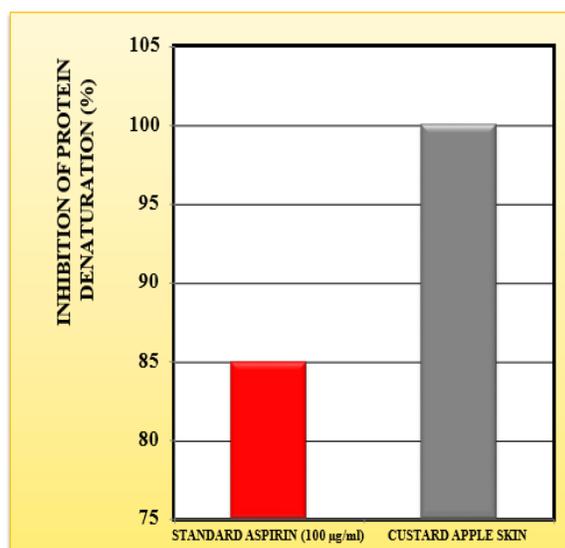


B. ANTI-LIPID PEROXIDATION



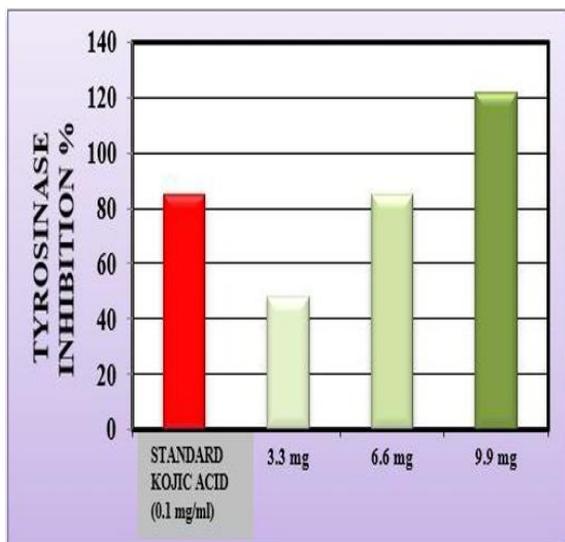
The above graph reveals the gradual increase in FRAP and anti-lipid peroxidation assay activity on increasing the concentration.

ANTI-INFLAMMATORY PROPERTY



The above graph reveals the anti-inflammatory property in terms of protein denaturation inhibition and it was tested and found to be significant as that of standard.

EXFOLIATING EFFECT:



The above graph assess the tyrosinase inhibition activity in the exfoliating effect and it shows an increased tyrosinase inhibition activity on increasing the concentration. Kojic acid is used as standard.

IV. DISCUSSION

- The study says that custard apple peel, traditionally underutilized, possesses significant

antioxidant, anti-inflammatory, wound-healing, and tyrosinase-inhibiting properties, supporting its potential as an anti-aging agent.

- Phytochemical analysis confirmed the presence of beneficial compounds such as flavonoids, alkaloids, and phenols.
- These compounds contribute to free radical scavenging and melanin regulation, making the peel extract a promising natural skincare ingredient.
- Additionally, its activity in inhibiting protein denaturation suggests wound-healing efficacy.
- This study highlights the potential of custard apple peel in developing herbal, non-toxic, and sustainable cosmetic and pharmaceutical products, promoting a circular economy by utilizing fruit waste for value-added therapeutic applications.

V. CONCLUSION

- From this we conclude that the custard apple peel exhibits significant antioxidant, anti-inflammatory, and anti-aging properties.
- It is high in alkaloids and flavonoids, and it serves as a potent bioactive ingredient for skincare and health applications.
- Exfoliating effect relates to anti-aging because it removes dead skin cells and exfoliates the skin and makes it look brighter and it contributes to overall anti-aging effect.

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