IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Review On Phytochemical And Pharmacognostic Evaluation Of *Punica Granatum* And *Annona Squamosa*"

1Sawrate Pooja, 2Shaikh Sameer, 3Shekde Nishant, 4Shengule Omkar, 5Shewale Dnyaneshwar

1Student , 2Student , 3Student , 4Student , 5Student

1DK Patil Institute of pharmacy ,

2DKPatil Institute of pharmacy ,

3DKPATIL Institute of pharmacy ,

4DKPATIL Institute of pharmacy ,

5DKPATIL Institute of pharmacy

Abstract :-

Punica granatum (pomegranate) and Annona reticulata (custard apple) are two medicinally important plants widely recognized in traditional and modern medicine. This review focuses on the comprehensive phytochemical and pharmacognostic evaluation of both species. The phytochemical studies reveal the presence of alkaloids, flavonoids, tannins, phenolic compounds, glycosides, and saponins contributing to their significant pharmacological activities such as antioxidant, antimicrobial, anti-inflammatory, and anticancer effects. Pharmacognostic parameters including macroscopic, microscopic, and physicochemical characteristics have been studied to aid in the standardization and authentication of plant materials. This review aims to consolidate existing knowledge to support further research and potential therapeutic applications of P. granatum and A. reticulata in drug development and herbal formulations.

Keywords: Punica granatum, Annona reticulata, phytochemicals, pharmacognosy, herbal medicine, standardization.

1. INTRODUCTION :-

Antioxidants and bioactive phenolic contents have been reported in the fruits of pomegranates that are imperative for better human health.Researchers are interested in searching for beneficial phytochemicals in the peels of fruit and using them in various cosmetic and pharmaceutical industries for humankind's welfare.The pomegranate have many biological activities such as antimicrobial, antiviral, antioxidant, anti-inflammatory, anti diabetic, anti-heart, and anti-cancer ,Pomegranate fruits are used in traditional medicine and medicine for its effectiveness in treating liver fallure, dry cough, facial swelling, skin itching, and jaundice ,Pomegranate peel is useful in treating sore throats, gastrointestinal worms and diarrhoea.The therapeutic potential of pomegranate peel is attributed to the chemical compounds with biological activity such as tannins, ellagic acid, gallic acid, catechns, flavonoids and anthocyanins

Various parts of plants such as the leaves, fruits, the barks, roots and Medicinal plants have played a vital role in traditional systems of medicine and continue to be a rich source of bioactive compounds for drug discovery and development. Among these, Punica granatum (commonly known as pomegranate) and Annona reticulata (commonly known as custard apple or bullock’s heart) are two tropical and subtropical plants that have drawn significant attention due to their nutritional and medicinal properties. Punica granatum, belonging to the family Lythraceae, is widely cultivated for its edible fruit and has been traditionally used for the treatment of various ailments such as diarrhea, ulcers, inflammation, and parasitic infections.

Pharmacognostic studies, including macroscopic, microscopic, and physicochemical evaluations, provide essential tools for the identification and standardization of herbal drugs. These parameters ensure the quality, safety, and efficacy of plant-based formulations.

Skin : - The skin is the largest organ of the human body, forming a protective barrier between the internal organs and the external environment. It is a complex organ involved in protection, sensation, thermoregulation, and more.

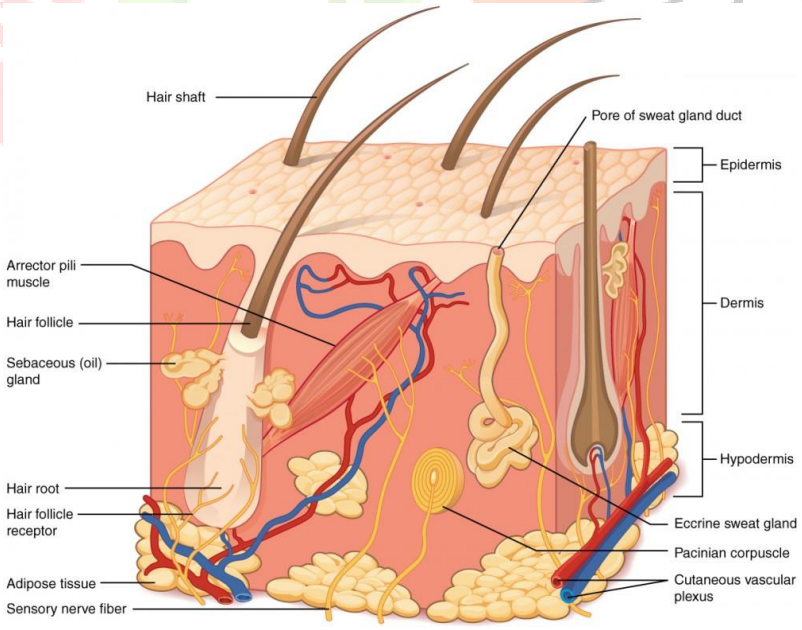


Fig No.1 – Skin

The integumentary system is formed by the skin and its derivative structures. The skin is composed of three layers: the epidermis, the dermis, and subcutaneous tissue. The outermost level, the epidermis, consists of a specific constellation of cells known as keratinocytes, which function to synthesize keratin, a long, threadlike protein with a protective role. The middle layer. the dermis, is fundamentally made up of the fibrillar structural protein known as collagen.

➢ Layers of Skin:-

- The skin consists of three main layers:-

A]. Epidermis:-

Sub-layers:-

- Stratum corneum
- Stratum lucidum (only in thick skin)
- Stratum granulosum Stratum spinosum
- Stratum basale

B]. Dermis :

Layers:-

- Papillary layer – loose connective tissue.
- Reticular layer – dense irregular connective tissue.

C]. Hypodermis (Subcutaneous layer):-

Deepest layer.

Made of adipose tissue and loose connective tissue.

Provides insulation, energy storage, and cushioning.

➢ Functions of Skin :-

1). Protection from physical injury :-

Acts as a barrier against mechanical trauma.

2). Protection from pathogens :-

Prevents entry of bacteria, viruses, and fungi.

3). Protection from UV radiation :-

Melanin in the skin absorbs harmful ultraviolet rays.

4). Prevents water loss :-

1. The stratum corneum maintains hydration and prevents dehydration.

2. **LITERATURE SURVEY** :-

Sr no.	Author Name	Year	Title
1.	Moradi M,Karimi A, shaharani M, Hashemi L,Ghaffari Goosheh M.	2019	Anti-influenza virus activity and phenolic content of pomegranate (Punica granatum L.) peel extract and fractions. Avicenna J Med Biotech.
2.	Ghadage P.k Mahamuni and S.S Kachare	2020	Formulation and Evaluation of herbal Scrub using Tamarind Peel, International Journal of Research.
3.	Tang F.	2020	Formulation and Evaluation of herbal scrub using Tamarind Peel, International Journal of Research.
4.	Bhtia S, Giri S, Lal F, Singh S.	2020	Identification Of Potential Inhibitors of Dietary polyphenols for SARS-COV -2 M protease: an in- silico study.
5.	Dhanashree Panadare .	2021	Extraction of volatile & non-volatile components from custered apple seed powderusing supercritical CO2 extraction system & its inventorynalysis, process, biochemistry.
6.	MS. Neha	2022	Beneficial aspects of custard apple (Annona Squamosa Linn), International Journal for Research in Applied Science & Engineering Technology.
7.	Neeraj Kumari, Suraj Prakash.	2022	Seed Waste from Custard Apple (Annona Squamosa Linn): A comprehensive Insight on Bioactive Compounds, Health promoting Activity & Safety Profile.
8.	Bushra S.Sayyad, Tejal Vishe.	2023	Formulation and Evaluation of Herbal Face Scrub International Journal of Research Publication and Reviews.

3. **AIM & OBJECTIVE** : -

AIM :-

"Review on Phytochemical & Pharmacognostic evaluation of Punica granatum Peel and Annona reticulate Leaf for Herbal skin Care Scrub."

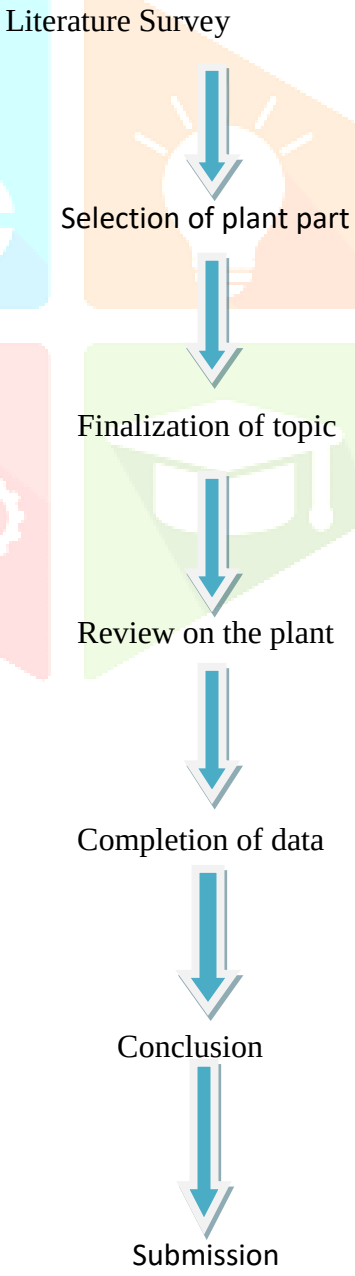
OBJECTIVE :-

- To highlight the potential therapeutic applications of pomegranate peel and Annona squamosa seeds as natural remedies for various health conditions.

- To study the process of tanning ,Whether for skin exfoliation or surgical hygiene,Removing impurities and promoting healthier state.

- The goal is to remove dead skin cells, improve skin texture and tone, promote circulation, moisturizing skin

4. **PLAN OF WORK** : -



5. **PLANT PROFILE** : -

1. Punica Granatum peel
2. Annona Squamosa Leaf
3. Multani mitti
4. Glycerin
5. Rose Water

1.PUNICA GRANATUM :-

Fig.no.3- Punica granatum.

Synonym:- Granatum punicum, Grenade, Garnet, Mulberry.
Biological source:- The pomegranate, scientifically known as Punica granatum, is a fruit-bearing deciduous shrub or small tree.
Family:- Lythraceae
Chemical constituent:- Arils contain 85% water, 10% total sugars mainly fructose and glucose and 1.5% pectin, organic acid, such as ascorbic acid, citric acid, and malic acid, and bioactive compounds such as phenolic and flavonoids, principally anthocyanins.

Uses:-
1. Antioxidant effect
2. Antidiabetic effect
3. Anti-inflammatory effect
4. Antibacterial effect
5. Antiviral effect

- **Punica granatum: -**

Advantages : -

1. Anti-inflammatory: Property it helps to reduce inflammation in the body.
2. Rich in antioxidant: It helps to protect cells form damage.
3. Heart health: It may help to lower blood pressure.
4. Cancer prevention: It may prevent certain type of cancer.
5. Digestive health: It helps in the improve the digestion.
6. Nutrient rich: They provides the essential vitamins and minerals**.**

Disadvantages :-

1. Staining: The juice can stain clothes and surfaces.
2. Sugar contain: These are having more amount of natural sugar.
3. Drug interaction: They can interact with certain medication.
4. Allergic reaction: Some people may get allergic reaction.

2.ANNONA SQUAMOSA :-

Fig. no. 4- Annona Squamosa.

Synonym: Sugar apple, Sweetsop apple, Custard apple.

Biological source: Annona squamosa, commonly known as the sugar apple or sweetsop, is a tropical fruit-bearing tree.

Family: Annonaceae.

Chemical constituent: Annona squamosa is a complex plant with a variety of chemical constitients, including sugars, vitamins, minerals, acetogenins, alkaloids, and other bioactive compounds.

Uses:

1. Antimicrobial activity
2. Hepatoprotective activity
3. Pesticide and anti-headlice
4. Anti-thyroidal
5. Anti-helminthic

- **Annona squamosa :-**

Advantages:-

1. It is rich in vitamins.
2. Rich in antioxidant.
3. Boost our immune system.
4. It is used in traditional medicine for their insecticidal pesticide.
5. It is used as a natural pesticide.
6. It helps in digestion.
7. It regulate blood sugar level.

Disadvantages:-

1. It may toxic when ingested in large quantity.
2. It may have allergic reaction like skin rashes.
3. Potential neuro toxicity.

3. MULTANI MITTI :-

Fig.no.5-Multani Mitti.

Synonyms:- Fuller's Earth, Indian Healing Clay, Bleaching Clay, Bentonite

Biological Source:- Multani Mitti is a natural clay composed primarily of hydrated aluminum silicate and other minerals such as magnesium, calcium, and iron oxides. It is not derived from a plant or animal source but is a type of sedimentary clay.

Chemical Constituent :- Hydrated Aluminum Silicate,Main component; gives absorbent and cleansing properties ,Magnesium Oxide (MgO) ,Mildly alkaline, skin soothing ,Calcium Oxide (CaO) Helps in cleansing ,Iron Oxide (Fe_2O_3), Gives yellowish-brown color Silica (SiO_2) ,Provides mild exfoliation ,Trace Minerals (Na, K, Zn, etc.), Contribute to skin healing and rejuvenation

Uses :-

1. Cosmetics Face packs, scrubs, masks – removes excess oil, cleanses pores, exfoliates dead skin
2. Dermatology Helps in treating acne, pimples, and pigmentation
3. Hair Care Scalp cleansing, dandruff control, oil balancing
4. Pharmaceutical Sometimes used as a base for skin preparations
5. Industrial Used as absorbent in oil refining, grease removal, cleaning agents

GLYCERINE :-

Fig.no.6 Glycerine.

Synonyms:- Glycerol, 1,2,3-Propanetriol, Glycerin

Biological Source:- Glycerine is a natural compound obtained from both plant and animal sources. It is primarily derived as a by-product during the saponification (alkaline hydrolysis) of fats and oils (triglycerides), especially from: Plant oils: Coconut oil, palm oil, soy oil.

Coconut: Family :- Arecaceae

Chemical Constituents:-Molecular Formula: $C_3H_8O_3$, Molecular Weight: 92.09 g/

Chemical Structure: $HO–CH_2–CHOH–CH_2–OH$

It is a simple polyol (sugar alcohol) compound containing three hydroxyl (–OH) groups.

Uses of Glycerine:-

Cosmetics & Skincare:-

- Moisturizer and humectant (draws moisture to skin)

- Used in lotions, creams, soaps, scrubs, shampoos

5. ROSE WATER :-

Fig.no. 7-Rose Water.

Synonyms:- Gulab Jal (Hindi), Rose Hydrosol, Aqua Rosae, Arq-e-Gulab

Biological Source :-Rose water is an aqueous solution obtained by the steam distillation of fresh petals of Rosa damascena or Rosa centifolia.

Family :- Rosaceae

Chemical Constituents:- Citronellol
- Geraniol
- Phenyl ethanol
- Linalool
- Eugenol
- Flavonoids
- Terpenes

Uses:- -

1. Skin toner and astringent
2. Anti-inflammatory & soothing agent
3. Antibacterial properties
4. Reduces skin redness and irritation
5. Aromatherapy & relaxation
6. Eye and skin cleanser in herbal cosmetics

6.Time Line :-

Time Duration	Plan Work
1-5 Days	Literature survey
5-13 Days	Finalisation of Topic
13-30 Days	Collection of data
30-40Days	Data interpretation
50 days	Submission

7. Conclusion :-

Overall, the findings support the traditional use of Punica granatum peel and Annona squamosa leaf in herbal medicine and cosmetics. Future studies focusing on isolation, characterization, and formulation optimization can further establish their pharmacological efficacy and contribute to the development of eco-friendly, affordable, and safe herbal skincare products. Thus, both these plants possess promising potential for incorporation into modern herbal formulations aimed at promoting natural skin care and health benefits**.**

The present review highlights the significant phytochemical and pharmacognostic potential of Punica granatum (pomegranate) peel and Annona squamosa (custard apple) leaves. Both plants are rich in bioactive constituents such as alkaloids, flavonoids, tannins, saponins, phenolic compounds, and glycosides, which are responsible for their wide range of therapeutic and cosmetic applications.

The phytochemical screening confirms the presence of compounds with antioxidant, antimicrobial, anti-inflammatory, and wound-healing properties, making these plant materials valuable for herbal cosmetic preparations, especially in formulations such as herbal face scrubs.

8.References :-

1. Ibraheen LH, Abed SA. Accumulation detection of some heavy metals in some types of fruits in the local market of Al-Diwaniyah City, Iraq. Rasayan J Chem. 2017;10(2):339–343. Available from: 10.7324/RJC.2017.1021641

2. Amudha P. Vanita Varadharaj, Phytochemical & pharmacological Potential of Annona Species: A Review, Asian Journal of Pharmaceutical & Clinical Research Volume 10, Issue 7, (2017).

3. Dalia H. Eshra, Physiochemical properties of the seed kernel& the oil of custard apple (Annona Squamosa Linn), International Journal of food science & biotechnology vol 4,no.4(2019).

4. Ghadage P. k Mahamuni and S.S Kachare, Formulation and Evaluation of herbal Scrub using Tamarind Peel, International Journal of Research, 2020; IX(VII): 1-10.

5. Mahajan Shraddha, Gayakwad Devshree, Formulation and Evaluation of Herbo-Mineral Facial Scrub Journal of Drug Delivery & Therapeutics 10 (3), 195-197, 2020.

6. Zhu N, Zhang D, Wang W, Li X, Yang B, Song J, Zhao X, Huang B, Shi W, Lu R, Niu P, Zhan F. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med. 2020; 382(8):727–733.

7. Singh, J., et al. (2023). Pomegranate Peel Phytochemistry, Pharmacological Activities and Applications. ACS Omega. doi:10.1021/acsomega.3c02586.

8. Sweidan, N., et al. (2023). Phytochemical analysis, antioxidant, and antimicrobial activities of pomegranate (Punica granatum) peel. (Open access / PMC).

9. Diab, R.Y.A., & Eltahir, A.S. (2019). Pharmacognostical Study of the Fruit Peels of Punica granatum. Open Access Library Journal / related pharmacognostic report.

10. Azmat, F., et al. (2024). Phytochemical profile and nutritional composition of Punica granatum (review). (PMC article).

11. Kumar, M., et al. (2021). Custard Apple (Annona squamosa L.) Leaves: Nutritional, Phytochemical and Bioactivity Profile. Foods / PMC review.

12. Safira, A., et al. (2022). A Review of an Important Plant: Annona squamosa Leaf. Pharmacognosy Journal / PhcogJ (review of phytochemistry & pharmacology).

13. Ginting, B., et al. (2021). Antioxidant activity and phytochemical identification of Annona squamosa leaf extracts. Pharmacognosy Journal (experimental phytochemical+antioxidant study)

14. Yassin, S., et al. (2025). Comparative phytochemical and pharmacological analysis of Annona squamosa cultivars. (recent comparative study).

15. Innspub / 2020. Phytochemical analysis, antibacterial and antioxidant activities of pomegranate (Punica granatum L.) peel extracts. (experimental paper on extraction & assays).

16. Mohammed Aslam (2022). Phytochemical screening and antioxidant potential of pomegranate products / peel (thesis / institutional report). (PDF institutional thesis / NAAC).

Guided by :	Academic In-charge :	Principal :
(Dr.A.D.Kshirsagar)	(Mr.S.M.Ambore)	(Dr.A.D.Kshirsagar)