

## **POMEGRANATE PEEL: EFFECT ON DIARRHOEA**

**E.R Rahulraj<sup>1</sup>, G N Kannolli<sup>2</sup>, M.R. Sajjanashetty<sup>3</sup>**

<sup>1</sup>PG Scholar, <sup>2</sup> Assistant Professor, <sup>3</sup>Professor

Department of Samhita Siddhanta S.V.M Ayurvedic Medical College, Ilkal, Karnataka,

### **ABSTRACT**

#### **Introduction**

Pomegranate (*Punica granatum*) is plant belonging to family Lythraceae. Pomegranate peel (exocarp and mesocarp), is extensively used in traditional medicine but discarded in large quantities as by-product, after the juice production. It has great nutritional values and numerous health benefits. Pomegranates helps in a Treatment for Cancer, Osteoarthritis and Other Diseases. The pomegranate has been used in natural and traditional medicine to treat sore throats, coughs, urinary infections, digestive disorders, skin disorders, arthritis, treatment for diarrhoea and oral lesions. Juice used to treat jaundice and diarrhoea. This present study is to understand the traditional use of Punica granatum.

Its therapeutic importance is scripted in various ancient and Ayurvedic literatures. It has many-fold clinical utility owing to the presence of important chemical constituents such as ellagic acid, ellagitannins, Punic acid, flavonoids, anthocyanins, estrogenic flavonoids and flavones.

**Methodology**- used as a literary study. **Aim**- of the research is to find the effect of pomegranate peel in diarrhoea. **Objectives** of the research is to understand the effect of the pomegranate peel are effective in the diarrhoea. **Discussion** made on the data collected from the various source regard pomegranate peel, its content, chemical composition and effect on diarrhoea. **Conclusion** were made on the data collected and discussed about the pomegranate peel, effect in diarrhoea.

**KEY WORDS:** Diarrhoea, Pomegranate Peel, Punica granatum

### **INTRODUCTION**

Pomegranate (*Punica granatum* L.) is considered one amongst the

oldest familiar edible fruits and also the Holy Quran, the Bible, the Judaic Torah, and also

the Babylonian Talmudic literature mention it as a 'Food of Gods' symbolizing fertility and prosperity<sup>[1]</sup>. Since antiquity and still these

days in many countries, totally different parts of the fruit are used in people and traditional medicine <sup>[1-3]</sup>.

Pomegranate is cultivated round the world. Recently, there has been an increase within the world demand for fresh fruit and derived products.

The reason for this increased interest in pomegranate is related to the ability of the juice and fruit extracts to push human health due to its good contents, are antioxidant, anti-inflammatory, antitumoural and anti-diabetic activities <sup>[4]</sup>. For native populations, not only the juice however also the typical discarded parts like mesocarp and exocarp, often cited as peel, are used for ancient preparations.

The peel decoction is used in India to treat infectious disease, diarrhoea and stomatitis <sup>[2]</sup>.

Peel extracts, that are common as antimicrobial mouthwashes<sup>[5]</sup>, even have anthelmintic, antibacterial, antifungal, antimalarial drug, and antidiarrheal properties, further as

respiratory pathologies, haemorrhage, and hypoglycaemic effects<sup>[3,6]</sup>. A recent review shed light on the phytochemical parts of peel that have Antihyperglycemic, hepatoprotective, and antihyperlipidemic effects <sup>[3,7]</sup>. Nevertheless, the various parts of this fruit are often incorrectly cited within the scientific works. Indeed, the peel, rightly defined with different synonymous as skin, peel, husk, and hull, is usually not differentiated from the mesocarp <sup>[8]</sup>.

The aim of this work is to know the importance of the epicarp or peel and their medicative properties. That we tend to see as a waste material in our day to day life.

### OBJECTIVES

1. To review the pomegranate peel and its importance and applied aspects in several disease conditions like diarrhoea etc.
2. To review the synonyms and biology classifications.
3. To review the chemical contents of pomegranate.

### MATERIALS AND METHODS

The work is a type of literary research.

**Source of Data:** The literary source is from all available published articles in

authentic journals. The collected matter from various source were analysed and critically correlated and authenticated

## LITERATURE REVIEW

### Synonyms

Hindi	Anar
Sanskrit	Dadima
English	Pomegranate
Assamese	Dalim
Marathi	Dalimba
Gujarati	Dadama
Bengali	Dadima
Tamil	Madalai
Telugu	Danimma
Malayalam	Matalam
Oriya	Dalimba
German	Granatapfel

### Botanical classification

<b>Botanical name</b>	Punica granatum
<b>Kingdom</b>	Plantae (Angiosperms)
<b>Subkingdom</b>	Tracheobionta (Vascular plants)
<b>Division</b>	Magnoliophyta (Flowering plants)
<b>Class</b>	Magnoliopsida (Dicotyledons)
<b>Subclass</b>	Rosidae
<b>Order</b>	Myrtales
<b>Family</b>	Punicaceae
<b>Genus</b>	Punica
<b>Species</b>	<i>P. granatum</i>

### Pomegranate peel

Compared to the fruit, the inedible pomegranate peel contains as much as three times the entire amount of polyphenols, as well as condensed

tannins, catechins, gallic acid and prodelpinidins. The higher phenolic content of the peel yields extracts to be used in dietary supplements and food preservatives. [9]

### Active phytochemical constituents

*Punica granatum* contains chemical constituents like, ellagic acid, ellagitannins, Punic acid, flavonoids, anthocyanins, estrogenic flavonoids and flavones. [10] The seeds are rich source of total lipids and protein representing 27.2 and 13.2 (w/w), respectively. Pomegranate seeds similarly comprise 6.0% (w/w) pectin and 4.7% (w/w) total carbohydrates. The copper, iron, sodium, zinc and magnesium contents of the juice are lower than those of seeds, except potassium, of which 49.2 ppm is found in the juice. The fresh juice contains 85.4% water, 10.6% total sugars, 1.4% pectin, 0.1% acid (expressed as citric acid) and 0.7 mg ascorbic acid. The peel of *Punica granatum* is a rich source of beta carotene, phosphorous and calcium.

In addition, the juice contains the organic acids such as gallic acid, chlorogenic acid and citric acid alongside with gallotannins (1,2,4,6-

tetra-O-galloyl D-glucose and 1,2,3,4,6-penta-O-galloyl-D-glucose) and ellagitannins (ellagic acid esters of

Dglucose with one or more galloyl substitutions).<sup>[10]</sup>

<b>PLANT PART</b>	<b>CHEMICAL CONSTITUENTS</b>
Pomegranate Juice	Anthocyanins, quercetin, rutin, 9-ellagic acid, gallic acid, catechin, glucose, ascorbic acid, caffeic acid, numerous minerals (particularly iron), amino acids
Pomegranate Seed Oil	Punicic acid (95%), ellagic acid, 10 different fatty acids, 14 types of sterols
Pomegranate Pericarp	Phenolic punicalagins, Gallic acid, catechin, quercetin, rutin, anthocyanidins, flavones, flavonones,
Pomegranate Leaves	Tannins (punicalin and punicafolin) and flavone glycosides (including luteolin and apigenin)
Pomegranate Flowers	Gallic acid, ursolic acid, triterpenoids (including maslinic and), Asiatic acid
Pomegranate Roots & Bark	Ellagitannins (including punicalin and punicalagin), numerous piperidine alkaloids

**Antimicrobial properties**

Drinking pomegranate juice has been shown to have antimicrobial properties against harmful bacteria that can exist in the stomach, such as eschericia Coli (E. coli) or Bacillus subtilis, both of which can cause painful infections and serious stomach conditions. <sup>[11]</sup>

**Classical Ayurvedic products**

Today different types of commercial products of pomegranate are produced by food.

Some Classical Ayurvedic products

- Dadimastaka curnam
- Hinguvacadi curnam
- Maricadi gulika
- Satavari ghrtam

- Kantakari ghrtam
- Dadima rasam

**Medicinal uses**

Different part of the plant like leaves, bark, fruit, fruit extract or juice and fruit peel have been reported to show numerous medicinal activities. Plant parts are used for the treatment of several diseases/disorders e.g. ulcer, snakebite, hepatic damage, dysentery, diarrhoea, helminthiasis, acidosis, haemorrhage and respiratory problems.

[12]

- Dried, pulverized buds are employed for the treatment of gastro-intestinal diseases.

- The ashes of *Punica granatum* are used as protective against skin infection.
- The powder prepared from its rind is used as tooth powder and also employed in cosmetic industries also.
- The aqueous extract of *Punica granatum* peel extract possesses wound healing activity and antioxidant activity.
- The fruit juice also has the property to inhibit low density lipoprotein.
- The phytoconstituents present in *Punica granatum* exhibits antioxidant, antiparasitic, antischistosomal, antidiabetic, antiviral, antibacterial, anti-inflammatory and anticarcinogenic activities.<sup>[13]</sup>
- Seed oil of *Punica granatum* also has anti-inflammatory activity.<sup>[14]</sup>
- Methanolic extract of fruit peel exhibited significant antibacterial activity because of tannin content.
- Extracts of the bark, leaves, immature fruit and fruit rind have been given to halt diarrhoea, dysentery and haemorrhages.<sup>[15]</sup>

- This study aimed to explore the antidiarrheal activity of methanol extract of rind of *Punica granatum*

### **DISCUSSION**

Recent past, the natural components have shown their supreme potential in the treatment of diseases/disorders. The constituents obtained from natural sources not only provide us an alternate system of medicine but also an intense insight into the natural harmonization of the human body. This review clearly point out the clinical importance of Pomegranate to overcome the various diseases effectively.

Extracts of the peels have been shown to be antihelmintic, antibacterial, antifungal, antiviral, and antidiarrheal properties and use of pomegranates in the treatment of diarrhoea owing to their antioxidant properties and phytochemical constituent's uniqueness.

### **CONCLUSION**

According to Indian System of medicine, all parts of pomegranate including roots, leaves, flowers, peel, seeds and the reddish brown bark are used medicinally.

As per various literature reports, chemical constituents obtained from

various parts of the *Punica granatum* have been reported to have varying pharmacological activities leading to the treatment of several diseases/disorders. Pomegranate bark, leaves, immature fruit and fruit peel extracts is given to combat diarrhoea and dysentery.

In Ayurveda dadimashtaka churna is used to manage the digestive system related problems and diarrhoea, amoebic dysentery. Classical references are quoted in Bhaishajya Ratnavali, Astangahridayam and Sahasrayogam.

#### **REFERENCES**

1. Khan, G.J., Jamshaid, M., Sajid, M.I., et al. The pharmacological, physiological and toxicological effects of pomegranate fruit extract and its constituents. (2014) *Can J Appl Sci* 4: 66–80.
2. Lansky, E.P., Newman, R.A. *Punica granatum* (pomegranate) and its potential for prevention and treatment of inflammation and cancer.(2007) *J Ethnopharmacol* 109(2): 177–206.
3. Viuda-Martos, M., Fernández-Lóaez, J., Pérez-álvarez, J.A. Pomegranate and its Many Functional Components as Related to Human Health: A Review. (2010) *Compr Rev Food Sci Food Safety* 9(6):635–654
4. Medjakovic, S., Jungbauer, A. Pomegranate: a fruit that ameliorates metabolic syndrome. (2013) *Food Funct* 4(1): 19–39.
5. Lansky, E., Shubert, S., Neeman, I. Pharmacological and therapeutic properties of pomegranate. (2000) *Adv Res Technol* 42: 231–235
6. Swarnakar, Y., Shroff, M., Jhaa, K., et al. Evaluation of Anthelmintic Potential in Fruit Peel of *Punica granatum* Linn. (Pomegranate). (2013) *IJPCS* 2: 461–464
7. Middha, S.K., Usha, T., Pande, V. A Review on anti hyperglycemic and Anti hepatoprotective activity of eco-friendly *Punica granatum* peel waste. (2013) *J Evid Based Complement Alternat Med* 656172
8. Çam, M., Hışıl, Y. Pressurised water extraction of polyphenols from pomegranate peels. (2010) *Food Chem* 123: 878–885
9. Chidambara Murthy, K. N.; Jayaprakasha, G. K.; Singh, R. P. (2002). "Studies on Antioxidant Activity of Pomegranate (*Punica granatum*) Peel Extract Using in Vivo

- Models". Journal of Agricultural and Food Chemistry. 50 (17): 4791–5.
10. Afaq F, Zaid MA, Khan N, Dreher M, Mukhtar H. Protective effect of pomegranate-derived products on UVB-mediated damage in human reconstituted skin. *Exp Dermatol.* 2009; 18(6):553–61.
11. Ahmad, I., Mehmood, Z., Mohammad, F., 1998. Screening of some Indian medicinal plants for their antimicrobial properties. *Journal of Ethnopharmacology* 62, 183–193.
12. Al-Muammar MN, Khan F. Obesity: The preventive role of the pomegranate (*Punica granatum*). *Nutrition.* 2012; 28(6):595–604
13. Dassprakash MV, Arun R, Abraham SK, Premkumar K. In vitro and in vivo evaluation of antioxidant and antigenotoxic potential of *Punica granatum* leaf extract. *Pharm Biol.* 2012; 50(12):1523–30
14. Caceres A, Giron LM, Alvarado SR, Torres MF. Screening of Antimicrobial activity of plants popularly used in Guatemala for treatment of dermatomucosal diseases. *J Ethnopharmacol.* 1987; 20:223–37.
15. Ghani A. Medicinal plants of Bangladesh: Chemical constituents and uses. 2nd edition ed. Dhaka, Bangladesh: The Asiatic Society of Bangladesh.; 2003

**Corresponding author:**

**E.R Rahulraj** PG Scholar  
Department of Samhita Siddhanta S.V.M Ayurvedic  
Medical College, Ilkal, Karnataka  
Email: [rahulraj442@gmail.com](mailto:rahulraj442@gmail.com)

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