

Preparation of Pomegranate (*Punicagranatum*) for Making Peels Powder

Shital Sadashiv Shinde, Mr.D.M.Waghmode, Dr.Santosh Jain

Aditya Institute of Pharmaceutical, Beed, Dr.Babasaheb Ambedkar, Technological University Lonere

Abstract—A study was conducted to prepare pomegranate peel extract (PPE) powder and evaluation of its effect on functional properties and storage stability of curd. The extraction was carried out with ethanol and water and the extracted samples were analysed for anti-oxidant activity and total phenolic content (TPC). Ethanol based extract had significantly ($p < 0.05$) higher anti-oxidant activity and TPC as compared to aqueous extract. Hence, ethanol-based extract was selected for powder preparation. It was mixed with drying aids viz. whey protein concentrate-70 (WPC-70) and skimmed milk powder (SMP) to avoid stickiness during drying. The WPC-70 based PPE powder showed higher anti-oxidant activity and TPC than SMP based PPE. Both PPE powders were incorporated into curd at different concentrations (0.5, 1 & 1.5%). Anti-oxidant activity and TPC of curd increased with increase in PPE concentration, however, sensorial attributes decreased at higher PPE concentration. Curd with 1% PPE powder showed considerable anti-oxidant activity and acceptable sensory attributes. During storage, PPE added curd shown resistance to increase in microbial count, change in acidity and whey syneresis. The shelf of the PPE added curd was in cred compared to control sample at 5 °C.

INTRODUCTION

The pomegranate (*Punica granatum* L.) is one of the oldest edible fruits and is widely grown in many tropical and subtropical countries [1]. Pomegranate (*Punica granatum* L.) is an important fruit plant of tropical and subtropical regions. It is extensively cultivated in Iran, Spain, Egypt, Russia, France, Argentina, China, Japan, USA and in India (2). References to the medicinal uses of pomegranate are found in many ancient cultures and religions. Pomegranate is mentioned thrice in a yat of the Holley Quran and by the Islam prophet, "Mohammad", as one of the fruits that will be found in paradise. The bark, leaves, flowers, fruit and seeds of this plant have been used to prevent and treat many infectious diseases[3]. Pomegranate is proved to have high antioxidant activity [4] and good potency for cancer

prevention [5]. The edible part of the fruit contains considerable amounts of acids, sugars, vitamins, polysaccharides, polyphenols and important minerals [6,7]. Great interest has recently been focused on the addition of polyphenols to foods and biological systems, due to their well-known abilities to scavenge free radicals, ie tioxidant power. The generation of free radicals plays an important role in the progression of umerous pathological disturbances, such as atherosclerosis [8] and braind is function [9]. Several studies have reported the reduced-risk efficacy of various extracts or pure compounds from the different parts of pomegranate plant against the growth of microbial pathogens [10]. Pomegranate (*Punica granatum*) Punicaceae) has been known to considerable pharmacological properties with antimicrobial, antiviral, anticancer, potent antioxidant and antimutagenic effects [11,12] and been used in the markets in the preparation of tinctures, juice, cosmetics and therapeutic formulae [13].



OBJECTIVES

Besides high antioxidant capacity, pomegranate peel extracts have been reported to possess a wide range of biological actions including anti-cancer activity, antimicrobial activity, antidiarrheal activity, apoptotic and anti genotoxic properties,

anti-tyrosinase activity, anti-inflammatory and anti diabetic activities .

Synonyms

Hindi: Anar

Sanskrit :

Dadimah,

English :

Pomegranate,

Marathi: Dalimba,

Gujarati : Dalimba,

Bengali : Dadim,

Tamil : Madalai,

Telgu: Danimma,

Malayalam : Talimatatum,

Pharsi: Anar tursa,

Arabi : Roman

Hamiz, German:

Granatpfels

Botanical Classification

Botanical name- Punica granatum

Kingdom: Plantae

(Angiosperms) Order: Myrtales

Family:

Lythraceae

Genus:Punica

Species: P. granatum

Plan of work

- Literature Survey
- Selection Of Herbal Drug
- Determire Active Constituent of Herbal Drug
- Selection of Excipients
- Selection Of Material & Equipment's
- Identification Test For API

Toxicology

Toxicology: pomegranate peel powder has generally recognized as safe status as a flavouring agent in fruit by the flavour and extract manufacturers association, and the us food and drug administration also recognizes pomegranate peel powder as a natural flavouring. The bitter odour test has made pomegranate peel powder useful in the osmetic industry.it is useful in creams, powders and religious and cultural purposes for centuries. in addition, the cream and powder are used for religious and medicinal purposes, and the cosmetic industry, especially in india.



MATERIALS AND METHODS

Production of pomegranate peel powder:

Separation of peel Pomegranate fruits harvested at optimum maturity and with good colour were brought to Department of Post-Harvest technology, Bagalkot. Fruits after thorough washing in tap water cut into four parts by clean stainless steel knife and then peel and seeds were separated manually without damaging. The peel obtained was used for further usage.

Pre-treatment

After separation of peel and other waste parts, the peel was cut into pieces by using stainless steel knife and then pre treated with 2% salt solution for 10 minutes, drained off salt water then washed again with tap water and drained off water peels were spread on stainless steel tray and dried under ceiling fan to remove surface water. These peels are Taken

Process of dehydration to get the pomegranate peel powder

After pretreatment, fresh pomegranate peel was placed in a tray drier at 65 °C for 10 hr to obtain dried peel. The dried pomegranate peel was crushed by food grinder in to powder form to completely pass through 0.5 mm size sieve. Pomegranate peel powder was packed in HDPE for further Physicochemical analysis and for fortification in various food products preparation. Indicator five groups in each village are actively participated and involved in the local natural resources management.

Colour

Cookies colour was measured with a ColorFlex EZ (Model CFEZ 1919, Hunter associates Laboratory, Inc., Reston) with a 45 mm (diameter) measuring tube using a white tile background. L*, a* and b* values denote lightness (white black), red-green and

yellow-blue scales, respectively. Three colour readings per cookie sample were made. M were made three times, each at a different local 3/5th consistent (same) side of the surface of the cookies. There were three replicate cookie samples for each treatment.

Therapeutical Uses of Pomegranate Peels Powder

- 1) Sore Throats
- 2) coughs
- 3) urinary infections
- 4) Digestive disorders
- 5) Skin disorders
- 6) Tapeworms
- 7) Skin cancer
- 8) diabetes
- 9) Healthy diet
- 10) Heart disease / Heart Attack
- 11) PH Maintain of Skin
- 12) Moisturizing skin

Health Benefits of Pomegranate Peels Powder



1) May Fight Acne, Pimples and Rashes

Pomegranate peel is said to possess antibacterial, antiviral, and anti-inflammatory properties

(I) It can effectively fight skin problems like acne, pimples, and rashes. The peel is rich in antioxidants and helps in keeping bacteria and other infections at bay.

(II) Anecdotal evidence suggests that pomegranate peels can also help in removing dead skin cells from your face when it is used in the form of a face pack or facial scrub. However, more studies are required to understand this benefit of pomegranate peel.



2) May Fight Against Skin Cancer

Amazing new research has revealed that pomegranate extracts contain a preventive agent that fights against the onset of skin cancer. The anti-inflammatory and anti-cancer properties of pomegranate peel are purported to be effective in the prevention and treatment of skin cancer. Pomegranate peel prevents the cancer cell proliferation process, thereby reducing the risk of skin cancer. However, very few research studies are available in this regard, and more long-term research is required to understand this benefit of pomegranate peel in humans.

3) May Protect Against Heart Disease

(I) Pomegranate peel is rich in antioxidants that are highly capable of protecting LDL cholesterol against oxidation. It is also said to possess vasculoprotective effects that prevent heart problems. (II) This is beneficial because LDL cholesterol oxidation in your body can lead to oxidative stress, a major contributing factor toward heart disease and other ailments.

4) May Boost Bone Health

Pomegranate peels are effective in reducing bone density loss. Studies indicate that consuming concoctions made of pomegranate peels can help boost bone health and prevent the onset of osteoporosis after menopause. A study states that pomegranate peel is rich in tannins, polyphenols, and flavonoids, and the consumption of

5) May Cure Sore Throat And Coughs

(I) According to traditional medicinal practices, pomegranate peel helps relieve cough and is used in a powdered form with water as a gargle to help relieve sore throat

(II) Multiple studies suggest that the hydroalcoholic extract of pomegranate peel possesses antibacterial properties that may help in treating sore throat and cough

6) May Act As A Natural Moisturiser And Sunscreen
Limited data is available on this point. However, anecdotal evidence suggests that the ellagic acid found in the pomegranate peel may prevent the moisture in skin cells from drying out, hence keeping your skin hydrated. Furthermore, pomegranate peel is said to hydrate and protect your skin from environmental toxins and restore its pH balance. That is also why they are used in skin care products for their moisturizing properties.

Oily Skin/Combination Skin:

Pomegranate oil even works for oily skin and the use of pomegranates have been beneficial for acne prone skin, to combat breakouts, reduce carring, and soothe minor irritations.

Youthful Skin:

Pomegranates promote smooth, firm skin by boosting collagen. And elastin production and soften skin.

Dry Skin:

It is a great ingredient for skincare because it penetrates deeply into the skin. It works for most skin types, (which depends on the skin care ingredients pomegranate is combined with). Since pomegranate oil penetrates deeply into the skin, it is effective for treating dry skin. It soothes dry, cracked, and irritated skin. It contains puniic acid, an omega 5 fatty acid that hydrates and prevents moisture loss.

Area And Distribution

(I) Pomegranate (*Punica granatum L.*) is one of the commercially important fruit crops of India. It is native to Iran (Persia).

(II) India ranks first with respect to pomegranate area and production in the world.

(III) Pomegranate is cultivated commercially only in Maharashtra. Small scale plantations are also seen in Gujarat, Rajasthan, Karnataka, Tamil Nadu, Andhra Pradesh, Uttar Pradesh, Punjab and Haryana.

Maharashtra contribute about 73% of the total area followed by Karnataka and Andhra Pradesh.

(IV) India is exporting pomegranate to UAE, Netherlands, UK, Saudi Arabia, Russia, Bangladesh, Egypt, Nepal and Oman.

Side Effects of Pomegranate for Skin

"Skin allergy/irritation is possible, but rare," says Mudgil. Unless you know you're allergic, you're likely safe though. And while there are few side effects to pomegranate itself except the red it dyes your fingers when you eat one), Hu did tip us off to something key about it as an ingredient.



Preparation Of Method Pomegranate Peel Powder

1. Take a handful of sun-dried pomegranate peels and roast them over a hot tava or a deep-bottomed pan
2. Allow them to cool and grind it in a grinder or mixer.
3. Make a paste of this powder with lemon juice or rose water and apply it all over your face, especially on your pimples or acne.
4. Let it dry for a while then wash it off thoroughly with lukewarm water.
5. Regular Practice will give you good result

CONCLUSION RESULT

From above comparative results and discussion of fresh and detanninated pomegranate peel powder it can be concluded that pomegranate peel i.e. Fruit juice industrial waste can be further utilized by tannin extraction and rest other byproduct (i.e. solid peel residue) can be produced as cattle feed supplement loaded with beneficial nutritional component at very low cost. Although fresh peel powder also exhibit higher amount of

nutritional component except few components but it was found that its higher tannin content reflects in its odour which makes it unpleasant and bitter due to which cattles may dislike it. Apart from this in detanninated peel there is two advantages first one is that gain of useful hydrolysable ellagitannin which can be further utilized in different Food, drugs and cosmetics as additives while other one is that gain of nutritious detanninated peel powder with improved odour which also contains a sufficient amount of tannin (i.e. 0.11%) as in residual form. The detanninated and fresh pomegranate peel powder showed almost equal calculated metabolized energy value, which is a supportive remark to recommend and use of detanninated pomegranate peel powder as a novel cattle feed supplement.

REFERENCE

I) <https://www.ncbi.nlm.nih.gov/books/NBK554579/>
II) [https://journal.chestnet.org/article/S0096-0217\(16\)31329-2/pdf](https://journal.chestnet.org/article/S0096-0217(16)31329-2/pdf)
III) <https://www.researchgate.net/topic/In-Vitro-Pharmacology/publications>
IV) <https://pubmed.ncbi.nlm.nih.gov/>
V) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9218663/table/T1/?report=objectonly>
VI) Alesón-Carbonell L, J Fernández-López JA Pérez Alvarez, VKuri. Characteristics of beef burger as influenced various types of lemon albedo. *Innovative Food Science and Emerging Technology*. 2005; 6:247-255.
VII) Anon. Approved Methods of the American Association of Cereal Chemists: Method 44-15A (9 ed.). St. Paul, MN, 1995.
VIII) Anonymus. Official Methods of Analysis, 13th edition, Association of Official Analytical Chemists, Washington. DC, 1980.
IX) Chidambara MK, Reddy VK, Veigas JM, Murthy UD. Study on wound healing activity of Punicagranatum peel. *J Med. Food*. 2004;7:256-259.
X) Egdhami A, Asli DE. Determination of antioxidant capacity of pomegranate juice by using 2, 2-Diphenyl-1-picrylhydrazyl. *Org. Chem. J*. 2010; 1:30-33.
XI) Ismail T, Akhtar S, Riaz M, Ismail M. Effect of pomegranate peel supplementation on nutritional, organoleptic and stability properties of cookies. *International J. Food Sci. Nutri*. 2014, 1-6.

XII) Kushwaha SC, Bera MB, Pradyuman K. Nutritional composition of detanninated and fresh pomegranate peel powder. *J Environmental. Sci, Toxi. Food Techno*. 2013; 7 (1):38-42.

XIII) Lansky EP, RA Newman. Punicagranatum (pomegranate) and its potential for prevention and treatment of inflammation and cancer. *J Ethnopharmac*. 2007; 109:177-206.

XIV) N Seeram, R, Lee M, Hardy D, Heber. Rapid large scale purification of ellagitannins from pomegranate husk, a by-product of the commercial juice industry Separation and Purification Technology. 2005; 41:49-55.

XV) Negi PS, Jayaprakasha GK, Jena BS. Antioxidant and antimutagenic activities of pomegranate peel extracts. *Food Chem*. 2003; 80:393-397.