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Review Article

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A Review Pharmacognostic Description of *Grewia asiatica*

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Abstract

The tropical and subtropical fruit phalasa is primarily cultivated for its nutritious fruit. A low-calorie, high-mineral fruit, phallusa is rich in vitamin A and C and has a plethora of minerals like iron, calcium, and phosphorus. Eleven amino acids are found in phallusa fruit and seed, with leucine, aspartic acid, and glutamic acid making up the majority. The antidiabetic, anti-inflammatory, anticancer, antibacterial, and antioxidant properties of phalsa plants have been demonstrated in both laboratory and animal research. To the contrary, antioxidant properties are shared by vitamin C, total phenolic, anthocyanin, flavonoid, and tannin. Testing the phalsa plant's fruits and leaves against cancer cell lines revealed strong anticancer potential. Research has demonstrated that several phalsa plant components, thanks to the presence of various physiologically active chemicals, have radioprotective properties. Research has shown that the fresh fruit extract in water has potent anti-glycosidase and anti-amylase capabilities. There are a number of methods in which the phalsa plant regulates microorganisms, thanks to its many physiologically active chemicals. It was shown that the methanolic leaf extract of Phalsa had antiemetic and antimalarial characteristics. The phalsa plant's heat and cold polysaccharide components are highly effective in protecting the liver and treating many medical conditions. The nutritional, bioactive, phytochemical, and possible therapeutic uses of phalsa form the basis of this study. Possible health and economic benefits of the phytochemicals found in phallusa berries have been suggested.

Introduction:

Grewia asiatica, known locally as phalsa, is well known for its nutritional and therapeutic qualities. South Asian nations also cultivate the widely distributed *Grewia asiatica* L. Nehemiah Grew, one of the pioneers of plant physiology, is honored with the name Grewia. Since the dawn of human history, fruits have been prized for their nutritional and medicinal properties. Fruits have a significant role in many nations' sociocultural and medical systems. Antioxidants found in fruits and their juices are believed to protect against cancer, heart disease, and several other chronic disorders. Carbohydrates, vitamins, antioxidants, and minerals are abundant in fruits and are essential for active nations. Fruits are consumed more frequently because they contain a variety of bio-functional and chemo-preventive compounds that are believed to have health-promoting qualities. As a result, there is a growing interest in learning more about their nutritional and therapeutic qualities. The genus Grewia (Tiliaceae), which includes over 150 species of small trees and shrubs found in tropical and subtropical regions of the world, only produces edible fruits. In Pakistan, ten species have been recognized. *G.aisatica L., G. Damine Gaertn., G. elastica Royle, G. glabra Blume, G. helicterifolia Wall, Grewia microcosm L., G. Optiva G. tenax fiori, G. sapida Roxb, G. villosa Willd Grewia AsiaL, and J.R. Drumm. ex Burrett*.

Botanical Description and Traditional Uses:

Bushes of *Grewia asiatica* can reach a height of 4–5 meters. The large leaves range in length from 5 to 18 cm. The clusters of flowers, which are yellowish in color, consist of five large sepals (12 mm) and five smaller petals (4-5 mm). The flower's diameter is about 2 centimeters (Figure 1). [12].

Figure 1. *Grewia asiatica* L., Fruits and leaf.

While flower buds are frequently cylindrical or clavate, peduncles are axillary, long, and slender. Bracts are located beneath the pedicles. The plant's edible portion is globose, with dimensions of 1.0 to 1.9 cm in diameter, 0.8 to 1.6 cm in vertical height, and 0.5 to 2.2 g in weight. The fruits mature in March and June, while the blooms blossom in January and February. As the fruit ripens, its skin goes from pale green to cherry red or purplish red, and when it is fully ripe, it turns dark purple or even black. The ripe fruit has a very thin whitish coating and is delicate and sensitive [13,14]. Like berries, this fruit has a sweet, sour, and acidic flavor. Grapes are the flavor profile.According to traditional medicine, the fruits have a wide range of uses, including the treatment of a variety of illnesses including TB, erectile dysfunction, anorexia, indigestion, thirst, toxaemia, stomatitis, asthma, hiccups, fevers, and diarrhoea [18-22]. While steam bark is used to refine sugar [25], root bark is utilized to cure rheumatism and urinary system issues [23, 24]. The leaves are applied to the skin to reduce irritation and painful rashes, as well as to cure cuts and wounds (26). They are believed to have antimicrobial qualities and are fed to cows. The stems and bark are utilized not only to construct ropes and baskets but also as fuel. The bark can also be used in place of soap. [27]

Compositional and Phytochemical studies: Fruits from G. asiatica are low in calories and fat but high in fiber, vitamins, and minerals [29]. The whole nutritional profile of fruits is shown in Table 1.

Table 1. Nutritional Values of fruit [29].

Nutrients	Values/100gm
Total lipid	**<1.1**
Ash (g)	**1.1**
Protein (g)	**1.57**
Sodium (mg)	**17.4**
Fiber (g)	**5.51**
Calcium (mg)	**1.32**
Potassium (mg)	**374**
Iron (mg)	**1.04**
Carbohydrate (g)	**21.1**
Phosphorus (mg)	**24.3**
Vitamin A (g)	**16.111**
Vitamin B1 (mg)	**0.02**
Vitamin B2 (mg)	**0.264**
Vitamin B3 (mg)	**0.8250**
Vitamin C (mg)	**4.3850**

Phytochemical screening was used to identify alkaloids, carbohydrates, glycosides, proteins and amino acids, saponins, steroids, acids, mucilage, fixed oil, and lipids.

Metabolites	*Grewia asiatica*
Alkaloids	+
Glycosides	+
Tannins	+
Flavonoids	+
Saponins	+

The fruits are great for creating juice and squash, which are very nourishing drinks for the indigenous people. Thought to be a heart tonic, phalsa ka sharbat is a tasty fruit-based summery beverage offered in food shorts. A variety of ingredients can be added to fruit juices to boost their nutritional content. The juice may be used to treat diabetes since low-glycemic meals include carbs that break down more slowly. It is also thought that eating meals with a low glycemic index reduces the risk of obesity and coronary heart disease. Tyrosine, glycine, and aspartic acid were all present in significant quantities in the hydrolyzed product, however phosphoserine was more concentrated.
in contrast to the pulp's other free amino acids. Juice included three main amino acids: taurine, serine, and phosphoserine [35]. Based on fresh weight (FW) and dry weight (DW), six micronutrients (Ni, Zn, Fe, Cr, Cu, and Co) were evaluated in G. asiatica fruits (Table 3) [36]. Cobalt was discovered in the lowest concentrations, whereas iron was found in the greatest. Numerous physiological and metabolic processes in the body depend on micronutrients.

Table 2: Fruit mineral contents [36].

Mineral	mg/100g FW*	µg/100g DW**
Cobalt	0.99	3
Chromium	1.08	36
Copper	0.48	16
Nickel	2.61	87
Zinc	144	48
Iron	140.8	1695

[1] FW = Fresh weight (Fresh fruit); [2] DW = Dry weight (After removeal of moisture from fresh fruit).

The composition of chemicals:

According to a chemical examination, 5% of seeds contain brilliant yellow oil. The fatty acid composition of this oil included palmitic (8.1), stearic (11.1%), oleic (13.4%), and linoleic (64%) acids as well as a trace amount of unsaponifiable matter (3.1%) [19].

Figure 2. Compounds isolated from G. asiatica: Pelargonidin 3,5-diglucoside

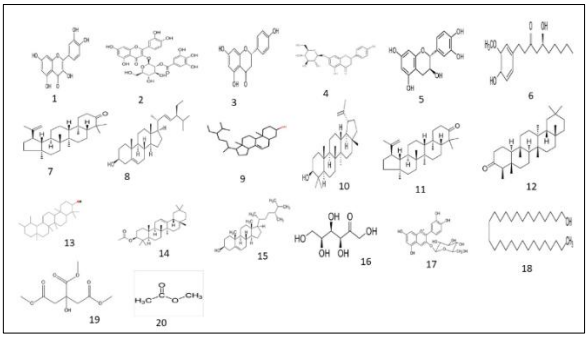

Figure 3 Quercetien, (2) Quercetien 3-O-beta-D glucoside,(3) Naringenin , (4) Naringenin-7-O-Dglucoside, (5) Catechins, (6) Grewinol, (7) Betulin, (8) Stigmasterol, (9) Stigmast-7-en-3-ol, (10) Lupeon, (11) Lupenone, (12) Friendelin, (13) α-Amyrin, (14) β-Am

Pharmacological Activities:

Antioxidant Activity: Medicinal plant mixtures of different chemical components may improve public health either singly or in combination with one another. The majority of the antioxidant activity in *Grewia asiatica* is found in the following compounds: isoflavones, flavonoids, flavones, anthocyanins, fignans, coumarins, catechins, and isocatechins. Complex diseases including Alzheimer's, stroke, cancer, diabetes, and atherosclerosis can develop as a consequence of oxidative damage brought on by free radicals. Antioxidant-based drug formulations aim to prevent and cure these conditions. In 2009, Kumar and colleagues the number 33. The antioxidant

capabilities of *Grewia asiatica* have been studied by multiple authors.

Activity against viruses and fungi: *Grewia asiatica's* sensitivity pattern was declined in the sequence of Candida albicans, Aspergillus notatum, Penicillium citrinum, and Aspergillus Niger, according to MIC tests of the organism's methanolic extract in a research by Kumari et al. It was shown to work well against Candida albicans. Aspergillus Niger, on the other hand, showed complete resistance to the extract. The Urdbean leaf crinkle virus was most strongly inhibited by the extract's antiviral activities. [37, Kumari and others, 2009]Antimalarial and antiemetics activity: *Grewia asiatica* crude alcoholic extract inhibits apomorphine-induced emesis at a dosage of 0.44 mg/kg and exhibits antiemetic effects in experimental model dogs at a dose of 120 mg/kg. Compared to the stand-alone medications maxolon (metoclopramide), chlorpromazine, or Largactil, the effect is noteworthy [yaqeen et al., 2008][23].The antiemetic and antimalarial effects of a methanolic extract of the leaves are the subject of another investigation. The crude methanolic extract showed 69% suppression of malaria parasites. A methanolic extract had an emetic activity of 39.14% and 59.69%, respectively. When given to male chicks at doses of 50 mg/kg and 100 mg/kg In 2012, Haq et al. Medications that reduce inflammation and pain: An aqueous extract of *Grewia asiatica* fruits has analgesic and antipyretic effects at dosages of 200 and 300 mg/kg, respectively. Its strong analgesic effects are due to its ability to block the pain signals produced by the tail immersion test and acetic acid writhing. More effective than aspirin at 100 mg/kg in reducing pyrexia was lipopolysaccharide extract from Escherichia coli at 400 mg/kg.In 2012, Das and colleaguesAntihyperglycemic activity: Numerous studies have shown the antidiabetic qualities of *Grewia asiatica's* leaves, fruits, and stem bark.When compared to the bark of Sesbania sesban and the fruits of Luffa acutangula, an alcoholic and chloroform extract of *Grewia asiatica* leaves (200 mg/kg) exhibits the most antidiabetic efficacy in alloxan-induced diabetic Wistar rats. [Patil and others, 2011] [25]

Conclusions:

Grewia asiatica is a herbal remedy for rheumatism, cancer, fever, and aging in addition to being a food plant. This plant also possesses radioprotective and antioxidant qualities. Its fruits have different levels of antioxidant activity in addition to providing essential nutrients. This fruit has to be thoroughly examined in order to be used to its full potential. The majority of research focused on the fundamental pharmacological and chemical properties of falsa fruit. To identify, quantify, and understand the bioactive elements producing tagged activities, extensive study is needed. New varieties with big fruits that are noteworthy in terms of quality, sweetness, and flavor must be developed. Additionally, these cultivars need to be able to grow in colder climates, have higher yields, and be resistant to pests.

Submission Declaration:

This manuscript has not been published previously and is not under consideration for publication elsewhere. The authors confirm that the work is original and have read and approved the final manuscript for submission.

Conflict Of Interest:

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this study.

Declaration Of Competing Interest:

The authors declare that they have no known competing financial interests or personal relationships that could have influenced the work reported in this paper.

Ethics Statement:

This review paper**,** involves no experimental research, human subjects, or animal studies that need ethical approval; instead, it is based entirely on publicly available literature. For academic openness and integrity, all acknowledged sources were appropriately referenced. I have done all in my power to provide an objective, accurate, and thorough literature review free from any conflicts of interest that could affect how the data are interpreted. The development of this study did not involve any instances of scientific misconduct, data manipulation, or plagiarism.

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