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The Phytochemical Determination from Leaf Samples of Two *Grewia* Species

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Abstract: **The medicinal plants presently are in significant perspective due to having special attributes being a huge source of therapeutic phytochemicals that may lead to the development of novel drugs. The plant *Grewia asiatica* (L.) is well known for its medicinal and therapeutic attributes. The plant is believed to possess antipyretic, antidiabetic, analgesic, antibiotic and antimicrobial properties. Any plant which possesses medicinal properties should be subjected to detailed pharmacogenetic study so that its proper identification can be done. The objective of present investigation was to carry out the determination of phytochemical study from leaf samples of *Grewia asiatica* L. and *Grewia abutilifolia* Vent.ex.A. Juss. The phytochemical screening of different solvent extracts of the leaves revealed the presence of alkaloids, flavonoids, saponins and tannins and irodoids along with minerals like calcium and potassium.**

Index Terms: **Phytochemical investigation, alkaloids, flavonoids, saponins, tannins, irodoids.**

I. Introduction

Grewia abutilifolia is a shrub belonging to the family Tiliaceae and known for its diverse medicinal values (Khasim *et al.,* 2020). *Grewia abutilifolia* is a threatened medicinal plant having immense unexplored therapeutic potential. The leaves of *Grewia asiatica* have been reported to possess various pharmacological activities such as anti-malarial, anti-emetic, anti-platelet, antimicrobial, anti-diabetic and anti-cancer activities (Zia-Ul-Haq *et al.*, 2012; Sangita *et al*., 2009; Parveen *et al.*, 2012 and Kakoti *et al.,* 2011). Various species of genus *Grewia* contains the constituents such as flavonides, alkaloids, glycosides, tannins, steroids, triterpenioids etc. (Goyal, 2012). The extracts from the plant of *Grewia* are known to have medicinal properties (Rosa *et al.,* 2006). Antioxidants present in different part of plants, are claimed to be helpful against cancer, cardiovascular and various chronic diseases. The presence of various biofunctional and chemo-preventive compounds in different parts of plant, believed to have health-boosting properties, are a major reason for their increased consumption. Fruits like ber, phalsa, apple and strawberry have been shown to possess antioxidant activity (Kaur and Kapoor, 2005). *Grewia asiatica*, locally known as phalsa is well known for its nutritional and therapeutic attributes. Various parts of the plant have been reported for possessing several therapeutic utilities i.e., hepatoprotective, appetizer, aphrodisiac and in curing inflammation, heart and blood disorder, fever, rheumatism, pustular eruptions, and diarrhea (Kirtikar and Basu, 2000). Plants and plant parts that possess medicinal values or exert important pharmacological effects in the animal body are generally known as medicinal plants. And it is now understood that the plants which naturally synthesize and accumulate some secondary metabolites and vitamins, possess medicinal properties (Sofowora, 1993). The leaves of *Grewia asiatica* are used in pustular eruptions. Its root bark is used as a remedy for rheumatism. 50% Ethanolic extract of aerial parts of *G. asiatica* showed hypotensive activity while the aqueous extract of stem bark is reported to be antidiabetic (Bhakuni *et al.,* 1971).

II. Material and Methods

The sample plants were collected from different localities of Maharashtra viz., Kolhapur, Pune, Sangli, Satara and Sholapur. The materials collected in polythene bags and brought to the laboratory for phyto-chemical study.

A. Determination of alkaloids

This was done by preparing Mayers reagents, Wanger's reagent and Dragendroff's reagent.

Procedure: 5 gm of powdered material was extracted with 50 ml 5 % ammoniac ethanol for 48 hrs , the extract was concentrated by distillation and the residue was treated with 10 ml of 0.1 N H2SO4. The acid soluble fraction was tested with Meyers,

Wagner's and Dragen droffs reagent. A white coloured ppt. denoted the presence of alkaloids.

B. Estimation of Irodoids

This was estimated by using reagents viz., Aqueous HCl, 0. 20 % CuSO4 5H2O and **Conc**. HCl

Procedure: 1 gm leaf powder was placed in test tube with 5 ml of 1% aqueous HCl. After 3- 6 hrs 0.1 ml of 0.20 % CuSO4 5H2O in water and 0.5 ml conc. HCl was added and when the tube was heated for a short time on a flame a colour was developed. Presence of blue color indicates that iridoids are presents.

C. Estimation of Saponins

Procedure: 4gm powder boiled with 50 ml Distilled Water, for half an hour. This extract is filtered. The filtrate is taken in test tube after cooling and shaken vigorously for a 1 or 2min. The formation of persistent froth of 1 cm length showed the presence of saponins.

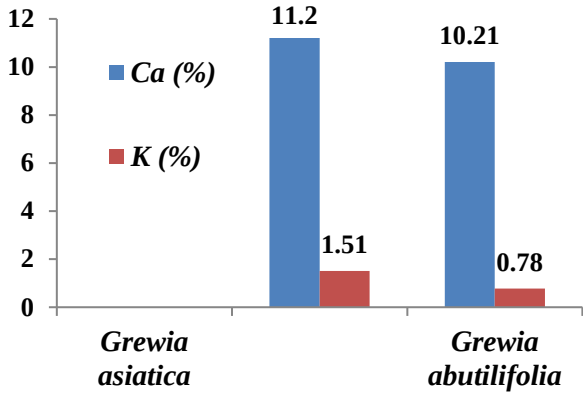
D. Estimation of Steroids

This was estimated by using and Chloroform and Conc. H2SO4.

Procedure: 5gm of powder in 50 ml water boiled for half an hr and filtered. The extract tested by following test for presence of steroids presence.

E. Salkowski reaction

respectively in selected *Grewia* plants. The results obtained during present work for estimation of colour and odour is in accordance with the results obtained by (Shabnampreet Kaur *et al.*, 2018).Similarly, when the phytochemical tests carried out for presence of phytochemical compounds, both the plant specimen showed the presence of Tannins, Phenols, Alkaloids and Saponins except Irodoids that was absent from *Grewia asiatica* and *Grewia abutilifolia* as well. The test carried out for minerals viz., Calcium and potassium showed the concentration 11.20% and 1.51% respectively in *Grewia asiatica* whereas 10.21% and 0.78% respectively in *Grewia abutilifolia.* The amount of concentration of minerals in the form of calcium and potassium was found to be high in *Grewia asiatica* over *Grewia abutilifolia.*



Graph 1: Comparative estimation of minerals from *Grewia asiatica* and *Grewia abutilifolia*

Grewia asiatica (L.)									
Colour	Odour	Taste	Tannins	Phenols	Alkaloids	Sapo nins	Irodo ids	Ca (%)	K (%)
Green	Disagreeable	Bitter	+	+	+	+	-	**11.20**	**1.51**
Grewia abutilifolia Vent.e x.A.Juss									
Colour	Odour	Taste	Tannins	Phenols	Alkaloids	Sapo nins	Irodo ids	Ca (%)	K (%)
Green	Disagreeable	Bitter	+	+	+	+	-	**10.21**	**0.78**

(Key: + indicates Present and – indicates absent)

CONCLUSION

The genus *Grewia* is known to exhibit very good pharmacological activities. The present study will be useful in the utilization of medicinal properties of these plants and will enhance the further development of new herbal products and drug investigations. Future studies on pharmacological properties and separation of phytoconstituents from these plants will also help in the study of new chemical constituents. The synthesis of nanoparticles can also be worked out as it contains good antioxidant property and novel phyto constituents can be isolated from *Grewia* species.

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