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Review Article

A COMPREHENSIVE REVIEW ON *GISEKIA PHARNACEOIDES* LINN. (MOLLUGINACEAE)

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ABSTRACT

Natural products are the source of drug leads from time immemorial. Therapeutically interesting and important drugs has been developed from plant source which are being used in traditional system of medicine. One such plant is *Gisekia pharnaceoides* Linn. being used in the traditional system for curing various diseases. This review presents the information about *Gisekia pharnaceoides* (Molluginaceae) and the article includes the ethno botanical, ethno pharmacological, pharmacognostical, phytochemical and pharmacological reviews. The profile presented in this review might be a source for researchers as well as practitioners in their future study.

Keywords: *Gisekia pharnaceoides*, Molluginaceae, Pharmacological reviews.

INTRODUCTION

The vegetable kingdom was already there when mankind evolved. As man began to acquire closure acquaintance with his environment, he began to know more about plants, as these were the only curative agents he had. Medicinal plants became one of the major objects of interest and in time, phytochemistry, succeeded in isolating the pure active constituents. These active constituents replaced the crude drugs with the development of semisynthetic and synthetic medicines. Undoubtedly, the plant kingdom still holds large numbers of species with medicinal values,are yet to be discovered. One such species having medicinal value is *Gisekia pharnaceoides* Linn. (Molluginaceae) which is being traditionally used for various diseases.

MOLLUGINACEAE

Molluginaceae consists of about 14 genera and 120 species of plants which are annual or perennial, sub-shrubs or shrubs. Among 14 generas from Molluginaceae that occurs throughout the world *Gisekia pharnaceoides*is recognized for its economic and medicinal values. There are about seven species among which *pharnaceoides* finds an important place for its medicinal properties. The genus *Gisekia* had been initially included in Phytolaccaceae. Later it was placed in Aizoaceae. Presently the genus *Gisekia* separated from Aizoaceae and finally included in Molluginaceae[1,2].

PLANT PROFILE

General characters

Oldmaid or *Gisekia pharnaceoides* is an annual herb; the leaves possess a symmetrical base, an entire margin, obtuse apex ranging from 2.5 to 5.5 cm long and 1.5 to 3.8 cm wide. The leaves are alternate with pinnate reticulate venation. The leaves have green upper surface and pale green underneath, with characteristic odor and astringent taste. The seeds of the plant are tiny and resemble that of millets[3,4] (Figures 1-4).

Taxonomic Hierarchy

Kingdom	:	Plantae
Phylum	:	Tracheophyta
Class	:	Magnoliopsida
Subclass	:	Magnolidae
Order	:	Caryophyllales
Suborder	:	Caryophyllanae
Family	:	Molluginaceae
Genus	:	*Gisekia*
Species	:	*pharnaceoides*
Synonym	:	*Gisekialinearifolia*

Geographical distribution

The plant is available in India (Punjab, Rajputana desert, Gujarat, Konkan, Deccan, Tamil nadu), Ceylon, Pakistan (Sind), Africa and Afghanistan[3].

Ethnobotany

The plant is occasionally eaten as an emergency food in West Africa and India. In Kenya and Somalia it is used as a vegetable. It is also taken as a condiment. The fruit is reputed to be poisonous. It is sold in herb's market in Nigeria as a purgative[5].

Ethnopharmacology

Traditionally the plant is used for the treatment on swellings and asthma. It Cures scabies, and is used in the treatment of leucoderma, leprosy, urolithiasis, alexiteric, vulnerary, loss of appetite, rhinitis and have broncholytic and antiarrhythmic property. In India the fresh plant is used as an anti-helmintic in case of taenia. The sap of the plant sometimes used against warts[3,6,7].

PHYTOCHEMISTRY

The leaves of *Gisekia pharnaceoides* contains starch grains, calcium oxalate crystals and the following chemical constituents[8,9] (Table.1).

PHARMACOLOGICAL STUDIES

Gisekia pharnaceoides was screened for its nutritional value, free radical scavenging, anti-inflammatory, insecticidal and wormicidal activity.

Anti-inflammatory

Gandhimathi*et al*., (2011) screened the anti-inflammatory activity of *Gisekia pharnaceoides* using carrageenan induced hind paw oedema in rats. The effect of crude methanolic extract (500mg/kg) of *Gisekia pharnaceoides* is almost comparable to that of the reference drug (diclofenac sodium-5mg/kg). It showed highest percentage of inhibition (7.68%) followed by petroleum ether extract (63.15%). The methanolic extract administered with the dose of 250mg/kg to the experimental animals exhibited 56.5% inhibition[7].

Antioxidant

Gandhimathi *et al*., (2011) screened the free radical scavenging activity *of Gisekia pharnaceoides* using Diphenyl Picryl Hydrate (DPPH), Nitric oxide radical scavenging, hydroxyl radical scavenging, ABTS radical cation decolorization and superoxide radical scavenging method[7].

Insecticidal and wormicidal

Mohitbhardwaj, (2011) ethnobotanically surveyed on plants against insects and worms from ethnic tribes in Aravalli hill ranges in India and he reported *Gisekia pharnaceoides* as a potential insecticidal and wormicidal herbal drug. The whole plantis powdered and 20g of dried powder is used orally against intestinal worm infections[10].

Nutritional value

Sathiyasekaran *et al*., (2011) estimated the vitamins content of *Gisekia pharnaceoides* according to the standard methods given in Indian Pharmacopoeiaand United States of Pharmacopoeia. The mineral composition of *Gisekia pharnaceoides* was analyzed using Atomic Absorption Spectrometer. Proximate analysis of plant powder was carried out according to AOAC methods. Nutritive value of the powder was calculated based on the energy value available per Kg of the macronutrient[7].

TABLE.1 CHEMICAL CONSTITUENTS OF *GISEKIA PHARNACEOIDES*

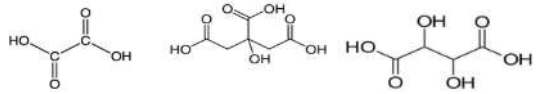
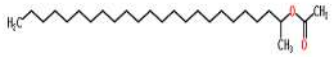
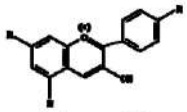
PART USED	SOLVENT	ISOLATED COMPOUNDS	STRUCTURE OF THE COMPOUND
Whole plant	Aqueous	Common sugars, Organic acidsand hydrocarbon	 Citric acid Oxalic acid Tartaric acid $CH_3(CH_2)_{28}CH_3$ Triacontane
	Ethanol	Myristone	$C_{27}H_{54}O$
	Petroleum ether	Tetracosanyl acetate	 Tetracosanyl acetate
	Benzene	Dotriacontane	 $CH_3(CH_2)_{30}CH_3$ Dotriacontane
Leaves and unripe seeds	Acid hydrolysis	Anthocyanidins	 Anthocyanidin



Figure 1: Aerial parts of *Gisekia pharnaceoides*



Figure 2: *Gisekia pharnaceoides*



Figure 3: Fruits of *Gisekia pharnaceoides*



Figure 4: Herbarium sheet of *Gisekia pharnaceoides*

CONCLUSION

The perusal of literature on *Gisekia pharnaceoides* focuses on the ethnobotanical, ethnopharmacological, pharmacognostical, phytochemical and pharmacological reviews. The compiled data of *Gisekia pharnaceoides* in this review gives the source for the researchers to investigate further and to identify the novel lead molecules that could bring the effective drug moiety in the field of modern medicine.

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