

**Review on *Spergula arvensis* and its pharmacological
properties. An Update**

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CONFLICT OF INTEREST

There is no conflict of interest while publishing this manuscript.

This manuscript is authors and co-authors complete original work.

Proper references and research have been done before writing this manuscript.

ABSTRACT:

Medicinal plants have been in use since very earlier times, dating back to around 5000 years in the past. Even today, the medicinal plants are in use, in traditional medicine system, and in finding out effective drug for various ailments. Even the drug, Metformin, has been obtained from the medicinal plant, known as, French iliac. The present review is on one of the rare medicinal plant, i.e. *Spergularvensis*. It describes the review on medicinal plants, and the plant itself, and its pharmacological properties researched all over the world.

Keywords: *Spergularvensis*, Plant medicines, Saponins, Medicinal plants.

- **INTRODUCTION**

Man's search for drugs for various diseases can be dated back far in the past. Ever since man started organizing surroundings and establishing the civilization, drugs have been in development from natural sources. There is plenty number of evidences that plant medicines have been used in our folklore, in order to cure various ailments. Drugs from plant sources are effective and efficient when processed, and the most important evidence is the use of metformin in the management of diabetes mellitus, which has been derived from a plant itself known as French Iliac.

Plant medicines have been source of establishing a complete subject in pharmacy, which is Pharmacognosy. Now, in Pharmacognosy we study various plant medicines and chemicals derived from plants known as Phytochemicals, such as Alkaloids, Glycosides, Terpenoids, Saponins, etc. Plant medicines usage can be dated back in the past to around 5000 B.C. There is evidence of use of plant medicines during earlier era evident from Sumerian clay slab from Nagpur district of Maharashtra, India around 5000 years old.

Plant medicines are not only evident for its usage in Indian civilization, but across the world. Like in Chinese system of medicines mainly the folk medicines, use of plant source has been evident. Indian Ayurveda medicine system possesses various drugs and preparation whose source can be evident from plants itself. Holy books of various cultures date to usage of plant medicines in the culture to treat various diseases and ailments.

Medicinal plants continue to be the important source of medicines and drugs even today, helping all of us and the mankind to find appropriate cure for the diseases and ailments, which have become pandemic or endemic in the times of our living civilization. Medicinal plants are very popular in some cultures because of the reason of having no or little side effects on the body along with curing and treating the diseases.

Some data from the past suggest, use of aromatic medicinal plants, referred in texts such as Bible, and holy book of Jewish, The Talmud. Aromatic medicinal plants can help us in finding cure for diseases such as Depression, Schizophrenia, Dementia, Alzheimer, even the present CORONAVIRUS COVID-19 mutation prone viral disease.

We can very well look for appropriate treatment for the present COVID-19 pandemic disease, in the medicinal plants, such as Garlic, Ficus racemose, Giloy, Amrood(in Hindi), etc.

Here, the present paper is about the similar plant medicine or the medicinal plant i.e. *Spergularvensis*, it is known as jhanglidhaania in India. Actually, it is a weed, which grows widespread in open all across the World.

As mentioned, that medicinal plants have been in use since ages, looking at humans past, even today it's in widespread use.

Some of the most medicinally valued plants across the world are, Ginkgo, evening primrose oil, Turmeric, Flax seeds, Echinacea, Grapeseed extracts, Lavender and its essential oils, and Chamomile.

Gingko

Gingko as commonly known around the world is obtained from very popular medicinal plant, *Gingko biloba*. It is also popularly known as maidenhari tree, and is species of trees which are native of mainly China. It is one of the living fossils, known to exist since, 290 million years ago.

Medicinal Value

It mainly possesses brain boosting potential. This means that the plant has properties of healing the brain & mind abnormalities. It is known to be effective and advantageous in dementia, Alzheimer disease, lowering the onset of dementia or its progress in the patients.

It seems to be beneficial in,

1. Alzheimer's Disease
2. Dementia
3. Anxiety
4. Diabetes
5. Depression
6. Inflammatory ailments or diseases

Evening Primrose Oil

It is a plant native to Europe and North America, and other regions of west. Its leaves, roots, and seeds are generally used in wounds healing, skin issues and skin problems, bruises, and hemorrhoids.

Some studies show its usefulness in diabetic neuropathy, breast pain, mild dermatitis, polycystic ovary syndrome diseases, multiple sclerosis, and atopic dermatitis.

It could be beneficial in;

1. Blood pressure Ailments
2. Diabetic Neuropathy
3. Breast Pain
4. Multiple Sclerosis
5. Inflammatory diseases
6. Menopause abnormalities in women

Turmeric

Turmeric is popular spice from Indian origin, and is popularly known for its wound healing and anti-infective properties. It is mainly obtained from flowering plant, *Curcuma longa*, family Zingiberaceae.

It is widely used as cooking ingredient, flavoring agent, and for its healing properties.

It is found to be beneficial in and not restricted to them,

1. Several skin diseases
2. Cancer healing, Cancer treatment
3. Effective against viral diseases prone to mutations in the body\
4. Arthritic pain and Inflammatory diseases

Echinacea

Echinacea is a popular plant native to America, mainly North America, and belongs to the family of daisy plants. It is mainly from Asteraceae family. It is generally found to be useful in treating common cold and viral infections.

Some of the beneficial effects of this plant are,

1. Immunity booster
2. Effective in Upper Respiratory tract ailments
3. Healing bronchitis
4. Treating common cold and other viral infections

Spergulinaarvensis

It is commonly known as Corn Spurry and belongs to genus of plant, *Spergula*.

It is both summer and winter broadleaf plant grown in wild, as weed, around all across the world. It mainly possess Saponins, and some activity as diuretic has been found somewhere around the world in this plant.

SCIENTIFIC CLASSIFICATION

KINGDOM: PLANTAE

CLADE: TRACHEOPHYTES

ORDER: CARYOPHYLLALES

FAMILY: CARYOPHYLLACEAE

GENUS: SPERGULA

SPECIES: *Spergulinaarvensis*

- **PHARMACOLOGICAL PROPERTIES IN THE PLANT SPERGULA ARVENSIS**

1. **ANTIBACTERIAL AND ANTIFUNGAL STUDY OF SPERGULA ARVENSIS**

Ullah, Najeeb, *et al.*2013, studied the antibacterial and anti-fungal activity in the plant *Spergularvensis*. The researcher studied, antibacterial activity against six strains, namely, *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Staphylococcus aureus* [A.T.C.C. strains and M.R.S.A. strains], and *Bacillus subtilus*,

The antifungal activity was studied on four fungal strains namely, Aspergillus flavus, Aspergillus niger, Aspergillus fumigatus and Fusariunsolani.



Figure 1: Snapshot of *Spergularvensis*

RESULTS FROM THE STUDY BY THE RESEARCHER,

Table 1: Antibacterial activities of extracts and fractions of *Spergula arvensis*

Microorganism (Bacterial strains)	Zone of inhibition (mm)					Standard Drug Levofloxacin (30µg)
	Ethanol Fraction	n-Hexane Fraction	Chloroform Fraction	Ethyl-Acetate Fraction	Aqueous Fraction	
<i>E. coli</i>	11	8	9	7	7	30
<i>P. aeruginosa</i>	18	17	14	18	12	33
<i>K.pneumoniae</i>	16	19	13	13	14	31
<i>S.Aureus (ATCC)</i>	12	11	9	10	12	35
<i>S. Aureus(MRSA)</i>	19	15	14	16	15	30
<i>B. subtilis</i>	9	11	12	11	7	33

Table 2: Anti-fungal activities of crude extract and different fractions of *Spergula arvensis*

Fungal strains	Zones of inhibitions (mm)					
	Ethanol Fraction	n-Hexane Fraction	Chloroform Fraction	Ethyl acetate Fraction	n-Butanol Fraction	Aqueous Fraction
<i>A. niger</i>	-	+	-	+	-	+
<i>A.fumagatus</i>	+	-	+	+	+	+
<i>A.flavus</i>	-	+	-	+	-	+
<i>F.solani</i>	-	-	+	+	+	+

Key: (-) No growth (inhibition), (+) growth (no inhibition)

FIGURE 2: RESULTS FROM RESEARCHER'S STUDY

From the results obtained by the researcher, it could be concluded that the extracts from the plant, *Spergulaarvensis*, showed variable effects both anti-fungal and antibacterial on different strains and further studies are required in order to develop proper antibacterial and antifungal remedies from the plant *Spergulaarvensis*.

The other pharmacological activities present in the plant which have been researched are,

2. Diuretic, Antibacterial & Antifungal (Sharmilaet al., 2014)

• **INSIGHTS FROM RESEARCH**

- *Spergulaarvensis*, has saponins as the major phytochemical present in it.
- Saponins have the properties of cancer treating in the clinical trials setup.

- And they can be utilized as potential cancer treating agents in the coming future.
- Also, some have also found a very interesting lipid profile lowering potential in the saponins.
- This means they can be utilized as potential treatment for pre-diabetes and diabetes, in order to reverse the lipid profile, and sugar levels in the body.
- The plant *Spergularvensis*, is a potential cytotoxic medicinal plant which can be utilized in treating various forms of ailments and diseases in the body, such as various kinds of tumors, cancers, and even in cases of viral diseases.

- **CONCLUSION**

Spergularvensis, is found around everywhere in the world. Though it has been widely identified as a weed, its value as medicinal plant is little known at present. Few of the researchers from India and Pakistan, have found antibacterial and antifungal properties in the plant, however, further pharmacological activity exploration is required in order to understand the plant, *Spergularvensis* true importance.

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