



# Effect of *Spergula arvensis* in Environment – A Review

Nikkila Devi R<sup>1</sup>, Dhisha V<sup>1</sup>, Priya R<sup>2</sup>, Suresh B<sup>1</sup>, Mahalakshmi Sundarapandian<sup>1\*</sup>

<sup>1</sup>JSS School of Life Sciences (Ooty Campus), JSS Academy of Higher Education and Research, Ooty

<sup>2</sup>School of Agricultural Sciences, Amrita Vishwa Vidyapeetham, Coimbatore

## Abstract:

Plants are multicellular and store their food as starch. Nowadays plants are used as herbal medicines to cure many diseases. *Spergula arvensis* is a weed plant that comes under the Caryophyllaceae family. The plants belonging to this family have antibacterial, antifungal, antiprotozoal, antioxidant, and anticancer activities. Corn spurry is used in several research to find its capacity in agricultural soils to promote plant growth and discover the plant's nutritional and medicinal value. Bioactive compounds present in *S.arvensis* play a very important role in the study of anticancer activity.

Keywords: *Spergula arvensis*, Corn spurry, Cancer, Nutrition

## INTRODUCTION:

Plants are prokaryotic organisms that are multicellular. They store their food as starch. Through different characteristics, plants can be distinguished from each other such as seed or seedless, vascular or non-vascular. Plants can be used in many ways like food, medicines, cotton, perfumes, fibers, manure, etc. It also supports rainfall, helps prevent soil erosion, and protect human from air pollution. Traditional methods for treating disease can be done with the help of medicinal plants. All over the world, 80% of the people depend on herbal medicines in order to acquire a good health. This was estimated by “World Health Organisation”. There are many medicinal plants like Neem, Tulasi, Turmeric, Fenugreek, and Ashwangandha<sup>1</sup>. One such plant is *Spergula arvensis*. It is a seeded plant, commonly known as “corn spurry”. It belongs to the family Caryophyllaceae which comes under the class Dicotyledonae. This plant is a kind of weed plant. It has a complete lifecycle from the germination of seeds, followed by the growth and death of the plant. In this article,

the detailed knowledge of *Spergula arvensis*, research undergone on this plant, and its medicinal uses have been discussed.

### **TAXONOMY OF *Spergula arvensis*<sup>2</sup>:**

Domain : Eukaryota  
 Kingdom : Plantae  
 Phylum : Spermatophyta  
 Subphylum : Angiospermae  
 Class : Dicotyledonae  
 Order : Caryophyllales  
 Family : Caryophyllaceae  
 Genus : *Spergula*  
 Species : *arvensis*

### **MEDICINAL USES OF CARYOPHYLLACEAE:**

Caryophyllaceae comprised about 75 genera and 2000 species. The common name of this is carnation or pink family. It is distributed mainly in cooler places and temperate regions of northern hemisphere. Many species of this family are used as traditional medicine in many parts of the world. The plant is used to treat colds, coughs, fever, diarrhoea, throat infection and gastrointestinal infection. The plants belonging to this family have properties like anticancer, antibacterial, antifungal, antiviral, antioxidant, and anti-inflammatory. Due to the presence of high amounts of secondary metabolites such as saponins and some compounds like fatty acid derivatives, isoprenoids, benzenoids, and phenylpropanoids these plants are showing many biochemical activities and different medicinal systems.<sup>3</sup>

### **MORPHOLOGY AND ANATOMY OF *Spergula arvensis*:**

The study of the external structure and physical form of plants is called phytomorphology. The morphology of plants is useful in many ways, particularly for the identification of different species. Roots, stems, leaves, flowers, and fruits are the morphology of flowering plants. *Spergula arvensis* is an annual plant, the height of the plant is 10-40 cm, it is straight, and shoots with uneven leaves that can hold moisture.<sup>4</sup>

Leaves are arranged in cluster form of 9-21 and it is axillary. They are simple, sessile (characteristics of plant parts that have no stalk), have nodes, 2 stipules, whorled, and opposite. The flower of this plant is about 1 cm in diameter and has 5 petals which are white in colour, and 10 yellow stamens. The flowering period of the plant is March and April. Through foliar anatomical studies, researchers found that the leaves of this particular plant is amphistomatic (stomata present on both side of the leaves), the adaxial and abaxial surface (upper and lower side of the leaf) shows the irregular shape of epidermal cells and the anticlinal wall is bending in and out. Pollen shape is super spheroidal. The researcher used binoculars, scanning electron microscope, and a light microscope to study the foliar anatomy and palynology (study of pollen grains) of the plant.<sup>5</sup>

### **BIOACTIVE COMPOUNDS:**

*Spergula arvensis* has alkaloids, proteins and amino acids, flavonoids, tannins and phenols, saponins, triterpenoids, carbohydrates, fats and oils.<sup>6</sup> These are natural bioactive compounds found in different parts of the plant (fruit, flower, stem, leaf, root). These chemicals are derived from plants that prevent cell damage caused by harmful substances. Bioactive compounds aim is to screen antioxidant, and antibacterial with specificity and speed. A diet rich in phytochemicals can reduce the risk of plaque, cardiovascular diseases and decrease the growth of cancer cells.

### **RECENT STUDIES:**

Recent studies on this plant suggest that this can act as a source of plant growth-promoting rhizobacteria. They underwent the work for the development of potatoes. This process compared six weed species to check the growth of the plant. Higher diversity in the root zone of the plant specifies the decreases in the abundant species but in corn spurry, Italian ryegrass, and barnyard grass there is a common and abundant species. So *Spergula arvensis* and Italian rye grass are better sources of PGP rhizobacteria for potatoes.<sup>7</sup> On exposure to ozone, the seeds of this plant show some phenotypic changes that happened during germination.<sup>8</sup> Antibacterial and antifungal activities were studied in this plant and the results were good. Also, it has insecticidal activity.<sup>6</sup> Therefore, this plant is essential from a medicinal point of view. It has many nutritional values and is also used as an alternative source of food for malnutrition.<sup>9</sup>

**CONCLUSION:**

Plants are the basic source of energy for all lives on earth and is an important source for all human beings. Corn spurry comes under the Caryophyllaceae family which has many medicinal properties. *S.arvensis* has numerous activities that are helpful to mankind. It is used as a source of plant growth-promoting rhizobacteria. It has antibacterial and antifungal activities and has many nutritional values. Bioactive compounds present in this plant have antioxidant and anticancer activities. Researchers are working on this plant to discover further activities that are beneficial for humans.

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