



## Scanning Electron Microscopic Analysis of *Passiflora Incarnata*, Linn. Leaf

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### Abstract

*Passiflora incarnata*, commonly known as passionflower, is a fast-growing perennial vine with climbing or trailing stems. It has large, intricate flowers with prominent styles and stamens. Extrafloral glands in *Passifloraceae* species have aroused the interest of many researchers because of their wide morphological diversity. Hence this present work analyzed the foliar trichomes on *Passiflora incarnata* Scanning electron microscopy analysis was carried out. Phytochemical screening was also studied which are of taxonomic significance. Rich source of saponins, glycosides and proteins. The major phytoconstituents of this plant is Passicol, a polyacetylenic compound.

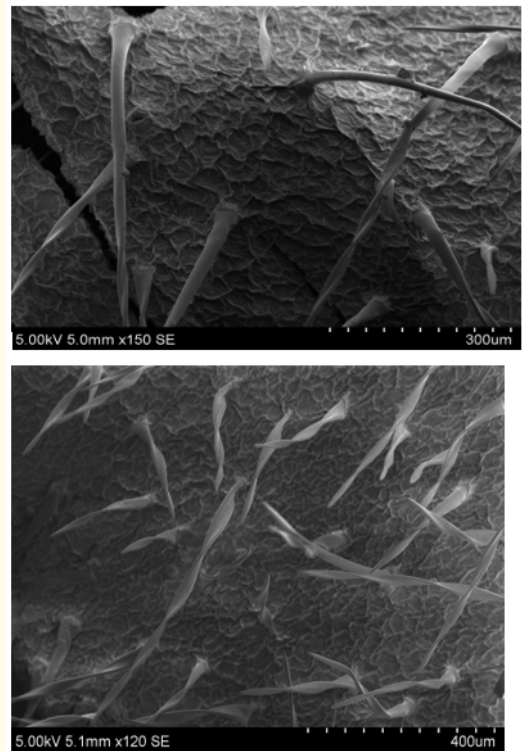
**Keywords:** Epidermal; Glandular; *Passiflora*; Stomata; Trichome; SEM

### Introduction

Medicinal plants form the backbone of traditional systems of medicine in India, mainly the three siddha, ayurvedha and unani, thousands of Indians still use plants to cure ailments. This extensive study has led intensified efforts on the documentation of ethnomedical data of medicinal plants Dhar *et al.* [1]. Medicinal plants are the rich source of novel drugs that forms the ingredients in traditional systems of medicine form bioactive principles and compounds in synthetic drugs Ncube *et al.* [2]. Passion flowers have unique floral structures, require biotic pollination. Pollinators of *Passiflora* include bumblebees, carpenter bees, wasps, bats, and hummingbirds. The fresh or dried leaves of *passiflora* are used to make a tea that is used for insomnia, hysteria, and epilepsy, having analgesic properties. Passionflower has sedative effects and preferred in Europe, but in 1978, the U.S. Food and Drug Administration prohibited its use in over-the-counter sedative preparations because it had not been proven safe and effective.

### Materials and Method

The whole plant was collected from Guru Nanak College campus, Chennai of Tamilnadu, India identified by botanist of CSMDRIA Chennai (Figure 1). Microscopical characters were studied Evans and Trease and Evans [3]. Epidermal tissues were studied from paradermal sections of lamina in surface view under Scanning Electron Microscope (SEM).



**Figure 1**

The leaf was dried, powdered and studied under the compound microscope.

### Extract preparation

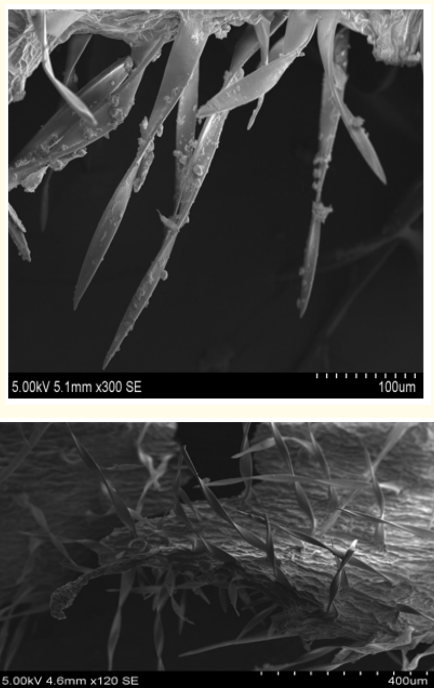
The plant leaves were air dried and powdered. Transferred the powdered material into solvent extractor and extracted it with 95% ethanol and aqueous solution for 72 h. The extract was obtained as a brown gummy solid. The extract was stored at room temperature and used for phytochemical screening.

Phytochemical screening of plant extracts was done following the standard procedure by Kokate [4,5] and Harbone [6]. The aqueous and ethanolic plant leaf extracts were subjected to preliminary phytochemical screening for the presence of alkaloids, quinones, resins, tannins, flavanoids, fats, saponins, phenolic compounds. The presence of more phytochemicals in *Passiflora foetida* indicates that *Passiflora foetida* have many medicinal properties [7].

## Results

### SEM analyses of leaf lamina

Trichomes were clearly distinguished as unicellular twisted, glandular trichomes with flat surface and wavy anticlinal epidermal wall cells (Figure 2).



**Figure 2**

### Phytochemical screening

Phytochemical screening revealed the presence of phenols, flavones, glycosides in the aqueous and ethanolic extract (Table 1). Presence of these phytochemical constituents might be responsible for the therapeutic properties exhibited by this plant.

Phytochemical constituent	Aqueous extract	Ethanolic extract
Alkaloids	+	+
Tannin	-	+
Saponin	-	-
Terpenoids	+	+
Phytosterol	-	+
Flavonoid	+	+
Glycosides	+	++
Phlobatannins	-	+
Carbohydrates	+	++
Triterpenoids	+	+
Quinone	-	-
Resin	-	-
Oil	-	-
Steroids	-	+
Phenol	-	+

**Table 1:** Phytochemical constituents of *Passiflora* leaf.

Shade dried powdered material. (+) presence and (-) absence

### Conclusion

The above parameters help in identifying the species and to establish the authenticity of this plant and can possibly help to differentiate the drug from its other adulterants.

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