

## ANTIDIABETIC & ANTIOXIDANT ACTIVITY ON THE STUDY OF BUTTERFLY PEA LEAF EXTRACT

Ms. Roshanee D Agrawal<sup>1</sup>, Mr. Mahesh K. Patil<sup>2</sup>, Ms. Sonali B. Jagdhane<sup>3</sup>,  
Mr. Ajit G. Jadhav<sup>4</sup>, Mr. Avinash P. Deore<sup>5</sup>

<sup>1,2,3,4,5</sup> Aditya Institute of Pharmacy, Chalisgaon, India.

### ABSTRACT

*Clitoria ternatea*, often known as butterfly pea plant, is widely utilized in Ayurvedic and traditional medicine. It is also utilized in the culinary and cosmetic industries for a variety of applications. This study examined the antibacterial and anticancer properties of methanol leaf extract from *Clitoria ternatea* against human cells. Promyelocytic Leukemia Cells Phytochemical screening identifies secondary metabolites in the extract, including alkaloids, phlobatannins, triterpenoids, flavonoids, lipids, steroids, terpenoids, tannins, and glycosides. Leaf extract included ether and carboxylic acid groups. The plant has numerous pharmacological benefits, including antioxidant, hypolipidemic, anticancer, anti-inflammatory, analgesic, antipyretic, antidiabetic, CNS, antibacterial, gastro-intestinal, antiparasitic, and insecticidal properties.

**Key words-** CNS, antibacterial, gastro-intestinal, antiparasitic, and insecticidal properties.

### 1. INTRODUCTIONS

Asian Pigeonwings Flower (*Clitoria ternatea*) is a popular herbal plant used in traditional medicine. A som of the Pigeonwings flower has active elements that make it an antibacterial chemical. The active compounds include alkaloids, phenols, saponins, tannins, and flavonoids. Each of these active chemicals has a unique Mechanism for limiting bacterial growth. Many patients worldwide use medicinal plants and herbs to improve their health. Conducting scientific research on their medicinal potential, biological features, and safety can help make informed judgments regarding their use There are hundred so fimportant medications, andbiologically Active chemicals were derived from traditional medicinal herbs. The plant has numerous pharmacological actions, such as antibacterial, antioxidant, anticancer, hypolipidemic, cardiovascular, central nervous, respiratory, immunological, anti-inflammatory, analgesic, and antipyretic. It has several pharmacological actions, including anti-inflammatory, analgesic, antipyretic, antidiabetic, CNS, antibacterial, gastro-intestinal antiparasitic, and insecticidal properties. This review will focus on the chemical composition and pharmacological effects of *Clitoria ternatea*.



#### Plant biology-

##### Synonyms:

*Clitoria albiflora* Mattei, *Clitoria bracteata* Poir., *Clitoria mearnsii* De Wild., *Clitoria tanganicensis* Micheli,  
*Clitoria zanzibarensis* Vatke

##### Taxonomic classification:

**Kingdom:** Plantae

**Subkingdom:** Viridaeplanta

**Infrakingdom:** Streptophyta;

**Division:** Tracheophyta

**Sub-family:** Papilionaceae

**Class:** Magnoliopsida;

**Superorder:** Rosanae

**Order:** Fabales;

**Family:** Leguminosae

**Genus:** Clitoria L.

**Species:** *Clitoria ternatea*

**Common name** - Butterfly pea, Clitoria ternatea, Asian Pigeon wings flower, Blue pea

#### Description-

Leaflets ovate to elliptic-oblong, up to  $6.5 \times 4$  cm, mostly hairless above,

Pubescent below. Flowers axillary, solitary or 2 together, resupinate, large and showy, bright blue

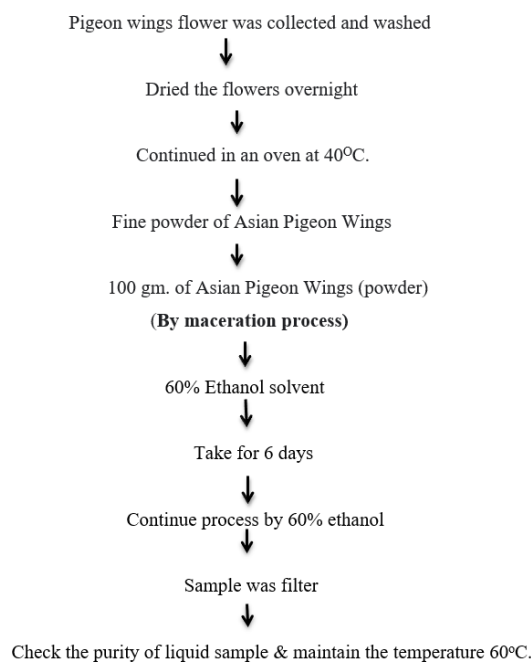
#### Collection and cultivation-

*Clitoria ternatea* leaves were obtained from south America & Asia . Using whose blue flowers are commonly used as a food dye, the leaves collected and converted into powder form.

#### Chemical constituents:

The plant has a variety of chemical elements, including tannins, phlobatannin, polysaccharides, saponins, triterpenoids, phenols, flavonoids, alkaloids. Anthraquinone, anthocyanins, cardiac glycosides, Stigmast-4-ene-3,6-dione, volatile oils, and steroids *Clitoria ternatea* seeds include fatty acids such as palmitic, stearic, oleic, linoleic, and linolenic.

#### Extraction process of Asian pigeon wings



#### Pharmacological effects-

##### Antimicrobial effect:

The antibacterial properties of *Clitoria ternatea* were studied using agar disc and well diffusion methods. *Clitoria ternatea* leaf extracts in organic solvents (petroleum ether, ethyl acetate, and methanol) were evaluated against *Bacillus cereus*, *Staphylococcus aureus*, *Klebsiella pneumonia*, *Proteus vulgaris*, and *Salmonella typhi*. The results indicated good antibacterial efficacy against the investigated microbiological pathogens. Methanol extract was shown to have higher inhibitory action than petroleum ether and ethyl acetate.

##### Anti-inflammatory antipyretic analgesic effects:

The petroleum ether extract (60-80°C) had substantial anti-inflammatory and analgesic effects. The methanolic extract of *Clitoria ternatea* Linn. leaves was tested for analgesic activity on mice at doses of 200 and 400 mg/kg body weight. The acetic acid-induced writhing test was used to assess analgesic activity.

##### Anticancer effect:

The in vitro cytotoxic effect of petroleum ether and ethanolic floral extracts (10, 50, 100, 200, 500 µg/ml) of *Clitoria ternatea* was examined using the trypan blue dye exclusion method. Both extracts showed considerable dose-dependent cell cytotoxic action. At a concentration of 10 µg/ml, petroleum ether extract reduced cell count by 8%.

However, at 500 µg/ml, the reduction was 100%. The ethanolic extract reduced cell count by 1.33% at a dosage of 10 µg/ml and by 80% at 500 µg/ml. The cytotoxicity of *Clitoria ternatea* flower extracts (aqueous and methanol) was tested on six cell lines, including normal and cancerous. These included the hormone-dependent breast cancer cells.

#### Central nervous effect:

*Clitoria ternatea* seeds and leaves are traditionally used as a brain tonic to improve memory and intelligence. *Clitoria ternatea* was researched in Alzheimer's disease to determine its efficacy and identify the main bioactive ingredient responsible for its activity. Ayurveda is widely utilized for several CNS effects, including memory augmentation. The origin of shankpushpi is unclear due to the use of various plants in different parts of India.

#### Benefits



1. Improve cognitive performance and reduce symptoms of common diseases fever, inflammation.
2. Butterfly pea flower tea, often known as blue tea, is prepared from the leaf.
3. Butterfly pea flower, cultivated widely in Southeast Asia, produces a vibrant tea.
4. The flavor is flowery and gently sweet, reminiscent of chamomile
5. Blue tea contains anthocyanins, which can help manage blood sugar levels.
6. Butterfly pea blossoms are a natural alternative to artificial blue food colorants, which are becoming less popular due to health concerns.

## 2. RESULTS AND DISCUSSION

The maceration extraction procedure involves sample immersion, which might Cell wall rupture occurs when concentrations inside and outside the cell differ, attracting chemicals in the cytoplasm to the solvent.

## 3. CONCLUSION

*Clitoria ternatea* is a potential medicinal plant with a wide spectrum of pharmacological properties. Its efficiency and safety make it suitable for various medical uses.

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