



A BRIEF REVIEW ON BUTTERFLY PEA

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ABSTRACT

Herb is a plant or plant part valued for its medicinal, savory, or aromatic qualities. The butterfly pea [clitoriaterneata] belongs to the family Fabaceae. Is one of the traditional medicinal plants commonly called as “shankhapushpi”. It contains various chemical constituents like alkaloids, flavonoids, tannins, cyclotides, steroids etc. It prevents and cures so many major diseases like anxiety, depression, HIV and cancer, etc it mainly acts on the central nervous system, especially for boosting the memory and improving intellect and it is used as an anti-microbial, anti-fungal, anti-diabetes, anti-convulsant, anti-pyretic, anti-inflammation, anti-asthmatic, improve eyesight and improve hair growth. Butterfly pea is used for food preparation in a coloring agent. In Hindus traditionally the flower of the butterfly pea is used as a daily puja ritual. So the ayurvedic practitioners and authors believe that Clitoriaterneata is a gift of nature.

INTRODUCTION

Herb is a plant or plant part valued for its medicinal, savory, or aromatic qualities. The word “**herb**” has been derived from the Latin word, “*herba*” and an old French word “*herbe*”. Now a days, herb refers to any part of the plant like fruit, seed, stem, bark, flower, leaf, stigma or a root, as well as a non-woody plant. Earlier, the term “herb” was only applied to non-woody plants, including those that come from trees and shrubs. These medicinal plants are also used as food, flavonoid, medicine or perfume and also in certain spiritual activities.[1] Herbal materials are the whole plant {or} parts of the plant such as roots, rhizomes, bark, seeds, fruits, and leaves, flowers and stems. The value of the herbal materials is related to the content of the active ingredients in the herbal preparation[1] The herbs having aromatic properties and medicinal properties. Medicinal plants, also called medicinal herbs,

have been discovered and used in traditional medicine practices since prehistoric times .plants synthesise hundreds of chemical compounds for functional including defence against insects, fungi, diseases, and herbivorous mammals. Numerous phytochemicals with potential or established biological activity have been identified. However, since a single plant contains widely diverse phytochemicals, the effects of using a whole plant as medicine are uncertain. Further, the phytochemical content and pharmacological actions, if any, of many plants having medicinal potential remain unassessed by rigorous scientific research to define efficacy and safety.[2]

HERBAL MEDICINES:

A type of medicine that uses plant or parts of the plant such as roots, stems, leaves, flowers or seeds to improve health prevent disease and treat illness. Herbal medicine,

also known as medicinal botany, medicinal herbalism, herbalism, herbology, botanical medicine and phytotherapy, is a medicinal system based on the use of plant or plant extracts that may be eaten or applied to the skin. It is the oldest form of medicine with a long history of use. It is a traditional medicinal practice based on the use of plant's seeds, berries, roots, leaves, bark, flowers or their extracts for medicinal purposes. It ranges from traditional and popular medicines of every country to the use of standardized and triturated herbal extracts.[3-4]

HISTORY OF HERBAL MEDICINE:

Medicinal herbs/plants or the herbal drugs refer to the use of plant and plant-based products for the management of common ailments. World Health Organization has defined herbal medicines as finished labeled medicinal product that contains an active ingredient, aerial, or underground parts of the plant or other plant material or combinations. In India, more than 70% of the population uses herbal medicine for their health-related problems. Many of the institutions adopt "reverse pharmacology" approach to study the clinical efficacy of medicinal plants and their pragmatic utility in healthcare. Moreover, the herbal therapeutics constitutes a major share of all the officially recognized Indian systems of medicine such as Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy (AYUSH). Around 20,000 medicinal plants have been identified for their medicinal properties; however, only 7000–7500 medicinal plants are being used by traditional practitioners. Similarly, the export of AYUSH-related items has increased from 2011 to –2012 and 2012 to –2013 and decreased in 2013–2014; however, import has been consistently increased during these years. Given this background, a brief review was carried out to assess the medicinal herbs and their development in India primarily through 5-year plan documents of India. Traditional herbal medicine is being practiced throughout the globe in the form of indigenous medicine. The use of medicinal plant resources for the purpose of healing human ailments goes with the evolution of human civilization and forms the basis of origin of modern medicine. Recognition of

the rising usage of herbal medicines and other alternative complementary medicine led to the founding of the office of alternative medicine by the National Institute of Health, USA, in 1992. Herbal medicine received a worldwide boost when the World Health Organization encouraged developing countries to use traditional plant-based medicine to fulfill needs unmet by modern systems. Herbal medicine is used by 75–80% of the world population, mainly in developing countries for primary health care. Moreover, the herbal drugs are believed to have no side-effects, cheap, and locally available. The most primitive recorded evidence of the use of herbal medicine in Indian, Chinese, Egyptian, Greek, Roman, and Syrian texts dates back to about 5000 years. The ancient classical treatises of India such as Rigveda, Atharvaveda, Charak Samhita, and Sushruta Samhita describe the usage of medicinal plants. This proves that the herbal medicines or the traditional medicaments have been derived from the rich traditions of ancient civilizations and scientific inheritance. In India, herbal therapeutics constitutes a major share of all the officially recognized Indian systems of medicine such as Ayurveda, Yoga and Naturopathy, Unani, Siddha, and Homeopathy (AYUSH). In India, 17,000–18,000 species of flowering plants are found of which 6000–7000 are estimated to have medicinal properties. The usage of these medicinal plants is found in many Indian cultures and is documented in Indian systems of medicine such as Ayurveda, Siddha, Unani, and Homeopathy. An estimated 960 species of medicinal plants are in trade of which 178 species have annual consumption levels more than 100 metric tons. These medicinal plants not only constitute a major resource base for the traditional medicine and herbal industry but also provide livelihood and health security to a large section of Indian population.[5-6]

Role of medicinal herbs in human health disease :

Medicinal plants have been used in healthcare since time immemorial. Medicinal plants play vital roles in disease prevention and their promotion and use fit into all existing prevention strategies. The researches and utilization of herbal medicine in the treatment

of diseases increases every day. Medicinal plants provide major source of molecules with medicinal properties due to presence of natural compounds. Medicinal plants are useful for curing human diseases and play an important role in healing due to presence of phyto chemical constituents. The natural and unique medicinal plants are used for curing various diseases/ailments and income generation. Ayurveda and other Indian literature have mentioned the use of plants in treatment of various human ailments. Medicinal plants are important source to combat the serious diseases in all over the world. The present study focuses on the knowledge on medicinal uses of plants and the scientific investigation to confirm their medicinal values and the role, contributions and usefulness of medicinal plants in tackling the diseases of public health importance. [7-8]

HEALTH BENEFITS OF HERBAL MEDICINE:

Herbal remedies have been used for huge number of years like conventional medicine. In fact, herbal medicine is the establishment of modern medicine. This medicine also has very less herbal side effects. Tragically, herbal medicine usually takes a backseat when compared with conventional drug therapy, which is a shame since herbal remedies offer lots of health benefits. In today's world, Herbal medicine most part used to treating intense constant sicknesses. [9] health benefits of herbs as shown in the fig 1.

SYNONYMS:

Asian pigeonwings, Blue pea, shankupushpam, Bluebellvine, Cordofan pea and Darwin pea. [10]

Butterfly pea plant as shown in the fig no 2.

PLANT DESCRIPTION:

Clitoriaternatea, commonly known as **Butterfly Pea, Asian Pigeonwings, Bluebellvine, Blue Pea, Cordofan Pea and Darwin Pea, Blue Butterfly Pea, Butterfly Pea Flower and Cocos** is an evergreen climber belonging to the Fabaceae family. Native territory of this vine is unclear. Some say Asia and some say tropical America. The specific epithet is in reference to the Island of Ternate in Indonesia which was considered by



Scientific Name	Clitoriaternatea
Kingdom	Plantae
Division	Spermatophyte
Sub division	Angiospermae
Class	Fudicots
Order	Fadales
Family	Fabaceae/Leguminosae
Sub family	Faboideae/Papilionoideae
Genus	Clitoria
Species	ternatea

Linnaeus as native territory. Regardless of native origin, it is today pan tropical thanks to naturalization from human cultivation. The flowers of this vine were imagined to have the shape of human female genitals, hence the Latin name of the genus "*Clitoria*", from "*clitoris*". Specific epithet means in clusters of three. *Clitoria Ternatea* is one of four herbs traditionally used as ShankaPushpi, an Ayurvedic medicine used to promote neurological health. It is grown as an ornamental plant and as a re-vegetation species (e.g., in coal mines in Australia), requiring little care when cultivated. As a legume, its roots form a symbiotic relationship with soil bacteria known as rhizobia, which transform atmospheric N₂ into a plant usable form, thus, this plant is also used to improve soil quality through the

decomposition of N-rich tissue. Butterfly pea is also a good source of phytochemical substances. It contains anti fungal proteins and has been shown to be homologous to plant defensins. Further these healing flower used in cases of sperm debility due to its spermatogenic properties and also it used to cure sexual disorders like infertility and gonorrhoea. It is valuable in many ways. In Ayurveda the whole plant i.e. leaves, roots, flowers of this plant for preparation of many traditional ancient herbal medicines. Its leaves powdered used for treating brain disorders. Further these healing flower used in cases of sperm debility due to its spermatogenic properties and also it used to cure sexual disorders like infertility and gonorrhoea. In India, it is revered as a holy flower, used in daily puja rituals. The flowers of this vine were imagined to have the shape of human female genitals, hence the Latin name of the genus "Clitoria", from "clitoris". [11 - 12]

MORPHOLOGICAL CHARACTERISTICS:

Butterfly Pea is a short lived, fast growing, perennial climbing, herbaceous scrambling or trailing leguminous herb that grows about 2.5 meters high. The plant is found growing in grassland; open woodland, bush lands, riverine vegetation, and disturbed forests. It can be found invading river banks, creek lines, the margins of waterholes, irrigation channels, disturbed sites, roadsides and disturbed open woodlands and grasslands. The plant is adaptable to a wide range of soil types from sandy soils to heavy clays including calcareous soils. It is moderately tolerant to salinity. The plant has strong woody root stock and thin, glabrous or sparsely pubescent, climbing or twining stems.

LEAVES :

Leaves are imparipinnate, arranged in 2–3 pairs, bright green, petiolate (1.5–3 cm long), leaflets are elliptic-ovate to elliptic lanceolate, 1.5–5 cm by 0.4–3 cm wide, acute or notched apex and rounded base, margin entire. Leaves of the butterfly pea as shown in the fig no 3.



Fig.3. LEAVES OF *clitoriaternatea*

FLOWER AND FRUIT:

Flower occurs in *clitoris*-like flower shape with large obovate, reflexed, funnel-shaped standard, around 4 cm (1.6 inches) in length and 3 cm (1.2 inches) wide, light to deep blue, mauve or white and yellow at the inner base. Flowering normally takes place from June to November. Flowers are followed by long, pods with each pod enclosing anything between six to ten seeds. Each fruit of this species measures between 5 cm and 7 cm (2 inches and 2.8 inches) in length and pods are flattish and linear-oblong and also can be consumed when they are young and soft. Flowers and fruits of the butterfly shown in the fig no 4.



Fig.4. FLOWER AND FRUITS OF *clitoria ternate*

CULTIVATION AND COLLECTION:

Butterfly pea is native to equatorial Asia, including locations in South Asia and Southeast Asia but has also been introduced to Africa, Australia and the Americas. Butterfly pea is essentially a plant of the humid and subhumid tropical lowlands at elevations from sea level to around 1,600 metres. It is also grown as an annual in warm temperate areas. It grows best in areas with an annual rainfall in the region of 1,500mm, but it has a reputation for drought tolerance in the seasonally dry tropics (with 500 - 900 mm annual rainfall) and can probably survive with as little as 400mm annual rainfall. Its annual mean temperature range is 19 - 28°C and it has survived moderate frost damage in the subtropics (at a latitude of 26°S). Plants can succeed on a variety of soils as long as they are well-drained, but prefer a fertile, friable soil, growing poorly on infertile sandy soils if they not fertilized. It does well on heavy clay soils. Prefers a position in full sun. It succeeds within a pH range of 5.5 - 8.9. Butterfly pea competes fairly well with weeds once established and can cover the ground in 4 - 6 weeks when sown at a population of 4 plants per square metre. Establishment may be a problem on fertile soils if sown with a vigorous companion grass or oversown into an existing pasture. It combines better with tussock than stoloniferous grasses in mixed pastures. The location of its growing points at the ends of the main branches makes it susceptible to frequent low cutting as well as to continuous heavy grazing. Flowers are cleistogamous but a small level of outcrossing occurs. Time to flowering can range from 7 - 11 weeks. Subsequent flowering flushes overlap pod maturation from the previous flush, and they continue throughout the year in frost-free regions. At higher latitudes in the tropics, there is usually a peak at the end of the wet season and again at the end of the cool season, if moisture is available. Pods mature in 8 - 10 weeks after flowering and shatter readily once fully dry. There is considerable variation in the size of flowers and leaflets. [13]

CHEMICAL CONSTITUENTS: Tannins, Phlobatannin, Carbohydrates, Saponins,

Triterpenoids, Phenols, Flavanoids, Flavonol glycosides

- ♣ Proteins
- ♣ Alkaloids
- ♣ Anthraquinone
- ♣ Anthocyanins
- ♣ Cardiac glycosides
- ♣ Cyclotides
- ♣ Volatile oils and Steroids

Cyclic peptides known as *clitides* have been isolated from the heat-stable fraction of *C. ternatea* extract. The blue colour of *C. ternatea* is a result of various anthocyanins, most importantly ternatins - polyacylated derivatives of delphinidin 3,3', 5'-triglucoside. [14-15]

HEALTH BENEFITS OF BUTTERFLY PEA (*Clitoria ternatea*):

Ayurvedic medicine in which various parts of the plants are used to treat health issues such as indigestion, constipation, arthritis, skin diseases, liver and intestinal problems. The flowers of *C. ternatea* are used worldwide as ornamental flowers and traditionally used as a food colorant.

- ♣ This paper reviews the recent advances in the extraction and biological activities of phytochemicals from *C. ternatea* flowers.
- ♣ The application of maceration or ultrasound assisted extraction greatly increased the yield (16–247% of increase) of phytochemicals from *C. ternatea* flowers.
- ♣ Various phytochemicals such as kaempferol, quercetin and myricetin glycosides as well as anthocyanins have been isolated from *C. ternatea* flowers.
- ♣ *Clitoria ternatea* flower extracts were found to possess antimicrobial, antioxidant, anti-inflammatory, cytotoxic and antidiabetic activities which are beneficial to human health. *Clitoria ternatea* flower is a promising candidate for functional food applications owing to its wide range of

pharmacotherapeutic properties as well as its safety and effectiveness.

♣ *Clitoriaternatea* is a twining herbal medicinal plant mostly found in Asia. Various constituents are found in different parts of the plant. The plant *Clitotiaternatea* is traditionally used for food coloring, stress, infertility and gonorrhea. The plant has been widely used in Ayurveda.

♣ Pharmacologically it is an anxiolytic, anti-inflammatory, analgesic, anti-microbial and anti-carcinogenic.

♣ It is also Cns Depressant, nephroprotective and has anti-Stress activities. Generally *Clitoriaternatea* has larvicidal activities, proteolytic activities, antihelminthic activities, antihyperglycemic activity, diuretic activity, antioxidant activity, antihistaminic activity and treat goiter.

♣ As *Clitoriaternatea* plant has great usefulness it should be cultivated, conserve and further research should be conducted for human well being. This article will focus on pharmacological characterization of *Clitoriaternatea* with the traditional and pharmacological uses of *Clitoriaternatea*.

♣ Butterfly Pea has been ascribed many health benefits in both Chinese and Ayurvedic medicine, many of which have been supported with contemporary clinical research.

♣ The herb shows promise in studies for its brain boosting effects and its wide spectrum of neurological benefits including helping with depression, anxiety and reducing fever.

♣ The Nervous System – Butterfly Pea has a calming effect on the brain

♣ The Digestive System – Butterfly Pea is an antiemetic (anti-nausea), antidyspeptic (anti-indigestion), mild-laxative and cholagogue (stimulates flow of bile from liver)

♣ The Circulatory System – Butterfly Pea is a haemostatic (helps stop bleeding) and a blood purifier

♣ The Respiratory System – Butterfly Pea acts as an expectorant and has shown to reduce the irritation of respiratory organs, useful in treating colds, coughs and even asthma.

♣ The Urinary System – Butterfly Pea is a diuretic, helping promote normal urination and can be used for dysuria (difficulty urinating)

♣ The Reproductive System: Butterfly Pea is reported to be spermatogenic, aiding in normal sperm production

♣ The Integumentary System – Pre-maturing ageing is often a problem of the skin. Flavonoids present in Butterfly Pea have been found to boost collagen production, increasing the skin elasticity.

♣ Butterfly pea is one of the few plants on earth that contain cyclotides, peptides that have shown to possess anti-HIV and anti-tumor properties, while certain cyclotides have been shown to be toxic to cancer cells.

♣ In fact, while more studies are needed recent Chinese research suggests butterfly pea is very effective against certain lung cancer cells.

♣ Researchers have also found that a powder made from the ground-up butterfly pea leaves can enhance cognitive ability, improving memory and brainpower.

♣ Other studies in India found that butterfly pea improves the body's levels of acetylcholine - an important neurotransmitter - vital for communication within your brain.

♣ Acetylcholine decreases significantly as we age and Butterfly Pea has been found to stimulate its production.[16]. Health benefits of butterfly pea as shown in the fig no 5.

Antioxidant: Flavonoids, anthocyanins and phenolic compounds in Butterfly Pea flowers activate antioxidant activity, which helps decrease oxidative stress caused by disease causing and ageing free radicals.

Nootropic: Butterfly Pea has been shown to enhance cognitive function and boost brain function.

Diuretic: Butterfly Pea promotes normal urination, which in turn lowers blood pressure

Analgesic: *ClitoriaTernatea* has been used traditionally as a local anaesthetic as it has been shown to help relieve pain and swelling.

Anxiolytic: Butterfly Pea has a calming effect on the body, reducing stress and anxiety

Anti-inflammatory: The deep indigo flowers contain flavonoids. Found in almost all fruits and vegetables, flavonoids are powerful antioxidants with anti-inflammatory and immune system benefits.

Anti-Asthmatic: It is used in common cold, cough & asthma as it acts as an expectorant and reduces the irritation of respiratory organs.

Anti-anxiety and depression: Indications are that high doses of Butterfly Pea may be adaptogenic – helping the body deal with stressors.

Anti-diabetic: Butterfly Pea has shown to inhibit glucose intake from the diet.

Anti-HIV: Butterfly Pea is one of the few herbs to contain cyclotides, which have exhibited anti-HIV effects in studies.

Anti-cancer and anti-tumour: *ClitoriaTernatea*'s cyclotides can cause cancer cell death by disrupting cell membrane integrity.

Anti-microbial: In several Indian studies, Butterfly Pea exhibited significant anti-

microbial effects against *Staphylococcus Aureus*.

Anti-convulsant :

Butterfly Pea has been shown to help reduce the severity and stress on the body from convulsions useful in treating epilepsy.

Anti-pyretic :

ClitoriaTernatea can help reduce fever by dilating the blood vessels right beneath the skin, whereby air can cool the blood easier.

Improve eyesight :

ClitoriaTernatea contains an antioxidant called proanthocyanidin, which increases blood flow to the capillaries of the eyes, useful in treatment of glaucoma, blurred vision, retinal damage or tired eyes.

Improve hair growth :

Rich in bioflavonoids, Butterfly Pea can promote hair growth and reduce greying of hair.

Improve skin :

Butterfly Pea's antioxidants stimulate collagen and elastin synthesis, which helps rejuvenate the skin and lessen wrinkles and other signs of ageing.

Aphrodisiac :

Butterfly Pea has been traditionally used as an aphrodisiac particularly for women and used to treat menstruation problems or white vaginal discharge (leucorrhoea).

AGRICULTURE APPLICATIONS :

- ♣ Insecticidal
- ♣ Molluscidal
- ♣ Nematocidal
- ♣ Antimicrobial

BUTTERFLY PEA USED AS A FOOD:

In Southeast Asia, Butterfly Pea is used as a natural food coloring. In traditional Thai cooking, butterfly pea flowers are squeezed for their blue extract, which is then mixed with coconut milk and other base ingredients to naturally color Thai desserts in blue and purple. 'Nam dokanchan' is a syrupy and refreshing indigo-blue drink commonly consumed in Thailand made with butterfly pea flowers, honey and sugar syrup. In Burmese and Thai cuisines, the flowers are also dipped in batter and fried. Butterfly pea flower tea is made from the *ternatea* flowers and dried lemongrass and changes color depending on what is added to the liquid, with lemon juice turning it purple.

- ♣ In Malay cooking, an aqueous extract is used to colour glutinous rice for 'kuihketan' and in 'nyonyachang'.
- ♣ In Kelantan, east Malaysia, locals add a few buds of this flower in a pot while cooking white rice to add a bluish tint to the rice known as 'nasi kerabu'. [17-18]
- ♣ **MARKET PRODUCTS OF BUTTERFLY PEA :**
- ♣ **NUROSMART CAPSULE :**
- ♣ Market products of butterfly pea Neurosmast capsule and ingredients as shown in figure no.6&7

Fig.5. Health Benefits of Butterfly Pea



Fig.6. Nurosmart Capsule



Fig.7. Ingredients Nurosmart Capsules

USES :

- ♣ Unique blend of herbs that acts on body and brain to reduce excessive aggression, hyperactivity and impulsivity in kids.

- ♣ Contains brain foods like brahmi and jyotishmati that enlighten brain and improve coordination in brain.
- ♣ Useful in improving focus, concentration and attentiveness in children.
- ♣ Reduce emotional and mental fatigue and stress.
- ♣ Improve brain ability of cognition and conation. [19]

VOLV (Hair oil) :

Market products of butterfly pea volv Herbal hair oil as shown in figure no.8

INGREDIENTS :

- ♣ Coconut oil
- ♣ Pumpkin oil
- ♣ Castor oil
- ♣ Black seed oil
- ♣ Grapeseed oil
- ♣ Rosemary oil
- ♣ Peppermint oil
- ♣ Butterfly pea flower
- ♣ Amla
- ♣ Curry leaves

USES :

- ♣ Anti hair fall
- ♣ Antidandruff
- ♣ Hair growth
- ♣ **HAIR OIL**
- ♣ Hair thickening
- ♣ Hair strengthening
- ♣ Healthy scalp
- ♣ Nourishment
- ♣ Prevents Greying [20]

Market products of butterfly pea volv Herbal hair oil as shown in figure no.8

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- ♣ Healthy scalp
- ♣ Nourishment
- ♣ Prevents Greying[20]

BLEND IT RAW APOTHECARY :

Market products of Butter fly pea flower powderas shown in figure no.9

INGREDIENTS:

Butter flies pea flower powder

USES :

- ♣ Soothing for dry irritated skin,
- ♣ prevents damage to the skin
- ♣ improves skin's barrier[21]

BLUE TEA

Market products of Butter fly pea flower powderas shown in figure no.10

INGREDIENTS :

Butterfly pea flower

USES :

- ♣ Boost brain activity
- ♣ Reduces anxiety
- ♣ Promotes hair growth
- ♣ Prevent of greying of hair
- ♣ Reduces hair fall
- ♣ prevents damage to the

skin

improves skin's barrier

SAHASRA DAY CREAM:

Market products of Butter fly pea Sahara day creamas shown in figure no.11

INGREDIENTS :

Butterfly pea flower extract

USES :

- ♣ Reduces inflammation,Calms skin and visibly reduces redness.
- ♣ Helps increase skin turnover to naturally restore.
- ♣ Boosts Collagen production and slows down skin's ageing process.
- ♣ Enhances skin's radiance and improves moisture retention.
- ♣ Improves skin barrier function
- ♣ Rejuvenates dull and tired skin

Fig: 8 Butterfly Pea Herbal Hair Oil



Fig.9. Butterfly Pea Powder



Fig 11 :Sahasra Day Cream



♣
♣

CONCLUSION:

Here we have attempted to provide a comprehensive and multidisciplinary account of the diverse properties and applications of *clitoriaternatea* it has several chemical constituents, such as Tannins, Phlobatannin, Carbohydrates, Saponins, Triterpenoids, Phenols, Flavonoids, Flavonol glycosides, Proteins, Alkaloids, Anthraquinone, Anthocyanins, Cardiac glycosides, Cyclotides, Volatile oils and steroids. *clitoriaternatea* cure and prevention of several diseases like inflammatory, asthmatic, anxiety and depression HIV, Cancer, Diabetes. It is used food preparations in colouring agent. This plant mainly acts on central nervous system, especially for boosting memory and improving intellect. The ayurvedic practitioners and authors believe that "*clitoriaternatea*" is a gift of nature.

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