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Edible medicinal plants in Solanaceae- Rich in potency yields best therapeutic effects.

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Abstract :
The solanaceae is a large varied family of trees, shrubs and herbs, rich in antioxidants . Solanaceae are known for possessing a diverse range of alkaloids. Therapeutically, these are the most powerful known anticholinergics in existence, meaning they inhibit the neurological signals transmitted by the endogenous neurotransmitter, acetylcholine. Medicinally important species of the family Solanaceaes belong to following genera namely: Solanum, Atropa, Capsicum, Datura, Withania, Hyoscymus, Nicotiana and Miscellaneous. These species are extensively used for medicinal purpose throughout the country. The Solanaceae family is characteristically ethnobotanical, that is, extensively used by humans. It is important source of food, spice and medicine. However, solanaceae species are rich in alkaloids whose toxicity to humans and animals ranges from mildly irritating to fatal in small quantities.Solanacea family drug possess highest edible value and medicinal value.
Keywords : *Solanaceae, solanum, Tomato ,bellpeper,capsicum, withania*

INTRODUCTION :

The Solanaceae family is also known as the Nightshade family, but has also been known as the potato family. There are about 90 genera and 4000 species, found in tropical and warm temperate regions. Asia and its countries like temperate zones of India having the highest cultivations of the plants in Solanaceae family.

But several of the species of Solanaceae are poisonous, however many species are using as food, having best edible value .Such eatables are bell peppers, chillies, tomatoes, potatoes, and ground cherries Species from the Solanaceae family form integral parts of human civilizations as food sources and drugs since thousands of years, and, more recently, as ornamentals. The poisonous alkaloids present in some species of the family have given the latter its sombre vernacular name of "nightshade."

The Solanaceae family comprises 3000–4000 species that are classified in approximately 90 genera. The family is highly diverse, includes perennial trees as well as herbaceous annual species and occupies a wide range of terrestrial habitats from deserts to rainforests . Compared with the large size of the family, the members of the Solanaceae attained importance in Indian eatable menu as food sources are potato, tomato, pepper, eggplant, pepino, bellpeppers etc.

Morphology :

Solanaceae members are characterized by flowers with five petals, sepals, and stamens and typically bear alternate leaves. Many species contain toxic alkaloids

They are annuals, biennials, or perennials and are usually herbs, though some species grow as shrubs or small trees. The leaves are generally simple and alternately arranged. The family is characterized by solitary or clustered flowers with sepals and petals, five in number and fused; five stamens; and a superior ovary (i.e., one situated above the attachment point of the other flower parts), composed of two fused carpels (ovule-bearing segments) and obliquely placed in the flower upon a basal disk of tissue. The style (upper end of the ovary) is simple and bears a two-lobed stigma, the pollen-receptive surface. The flowers are usually conspicuous and are visited by insects. The fruit is usually a berry or a capsule

Eminent Members of Solanaceae:

- Nightshade (genus *Solanum*)
  - buffalo bur (*Solanum rostratum*)
  - eggplant (*Solanum melongena*)
  - potato (*Solanum tuberosum*)
  - tomato (*Solanum lycopersicum*)
  - woody nightshade (*Solanum dulcamara*)
- ground cherry (genus *Physalis*)
- henbane (*Hyoscyamus niger*)
- angel's trumpet (*Brugmansia* genus)
- belladonna (*Atropa belladonna*)
- mandrake (genus *Mandragora*)
- pepper (genus *Capsicum*)
  - bell pepper (*Capsicum annuum*)
  - cayenne pepper (*Capsicum annuum*)
  - chili pepper (*Capsicum* species)
  - pimiento (*Capsicum annuum*)
  - tabasco pepper (*Capsicum frutescens*)
- petunia (genus *Petunia*)
- tobacco (*Nicotiana tabacum* and *N. rustica*)
- datura (genus *Datura*)
  - jimsonweed (*Datura stramonium*)

Among the most important of those are potato (*Solanum tuberosum*); eggplant (*S. melongena*); tomato (*Slycopersicum*); peppers (various *Capsicum* species); tobacco (*Nicotiana tabacum* and *N. rustica*); belladonna (*Atropa belladonna*); the poisonous jimsonweed (*Datura stramonium*) and nightshades (*S. nigrum*, *S. dulcamara*, and others); and many garden ornamentals, such as the genera *Browallia*, *Brugmansia*, *Brunfelsia*, *Cestrum*, *Datura*, *Lycium, Nicotiana, Nierembergia, Petunia*, *Salpiglossis, Schizanthus*, *Solandra*, *Solanum,* and *Streptosolen*.

Distribution:
Members of the Solanaceae family are found throughout the world but are most abundant and widely distributed in the tropical regions of Latin America, where about 40 genera are endemic. Very few members are found in temperate regions, and only about 80 species are found in the temperate zones of India.Its highest harvation is happening in north India. The genus *Solanum* contains almost half of all the species in the family, including all the species of wild potatoes found in the Western Hemisphere.

Nomenclature of Solanacea
The botanical classification and nomenclature of the species of Solanum have undergone substantial changes over time, as is the case with several other plant groups and ignorance of recent literature makes ample room for confusion. Solanum melongena var. incanum (L.) Kuntze and Solanum melongena var. insamum (L.) Prain are confused to be varieties of brinjal by many, but they are well established species, Solanum insamum L., and Solanum incanum L., distinct from Solanum melongena L., which has been projected as the most important source of the alkaloid solasonine (solasodine is the aglycone) used in the commercial production of steroidal compounds, is now Solanum viarum Dunal (Babu and Hepper, 1979). Solanum ferox L., is the currently valid name for Solanum indicum L., (Anonymous, 2009b). Solanum xanthocarpum Schrad . & Wendl. , is regarded as a synonym of Solanum surattense Burm.f., (Anonymous, 1978, 2007), which is open to question as Solanum surattense Burm. f., itself is regarded as a synonym of Solanum virginianum L., (Anonymous, 2009). The multilingual multiscript plant name database of the University of Melobourne (Anonymous, 2009b) may be consulted for the current status of specific and vernacular names of species of Solanum.

Bell Pepper- Bell pepper, (*Capsicum annuum*), also called **sweet pepper** or **capsicum**, pepper cultivar in the nightshade family (Solanaceae), grown for its thick, mild fruits. Bell peppers are used in salads and in cooked dishes and are high in vitamin A and vitamin C. The large furrowed fruits are technically berries and can be green, red, yellow, or orange. Bell pepper plants are grown as annuals, and the green varieties are harvested before the appearance of red or yellow pigment—generally about 60–80 days after transplanting.
They are low in calories and exceptionally rich in vitamin C and other antioxidants, making them an excellent addition to a healthy diet.

Tomato; Tomato**,** (*Solanum lycopersicum*), flowering plant of the nightshade family (Solanaceae), cultivated extensively for its edible fruits. Labelled as a vegetable for nutritional purposes, tomatoes are a good source of vitamin C and the phytochemical lycopene. The fruits are commonly eaten raw in salads, served as a cooked vegetable, used as an ingredient of various prepared dishes, and pickled.
Additionally, tomatoes contain a pigment named lycopene, which is associated with antioxidant properties. These fruits are also thought to slow signs of aging, help prevent cancer and reduce blood sugar, as well as promote eye, bone and skin health. In terms of Doshas, tomatoes can balance out excess Kapha. Not to mention how delicious a ripe, juicy tomato tastes.

Withania - There are about twenty species from this genus.
W. somnifera, *W. coagulans* and ***W. simonii*** are extremely important from medicinal point of view.
They are being used as one of the important ingredient in Ayurvedic and Unani recipes.
W. somnifera also known as Ashwagandha is one of the most widespread tranquillizers. The species name somnifera means “sleep inducing” in Latin, indicating that to it are attributed sedating properties but it has been also used for sexual vitality and as an adaptogen.
It has been traditionally used for the Ayurvedic systems as aphrodisiac, diuretics, for treating memory loss. It acts mainly on the reproductive and nervous system, having a rejuvenate effect on the body, and is used to improve vitality and aid recovery after chronic illness.
The fruits and seeds are diuretic in nature.
The medicine prepared out of its leaves is used for curing inflammation of tubercular glands and that of its root for curing skin diseases, anticancer, bronchitis and ulcers.
Whole plant, but especially the leaves and the root bark, are antibiotic, aphrodisiac, diuretic, narcotic, strongly sedative and tonic.
The active constituents are alkaloids and steroidal lactones. Among the various alkaloids, withanine is the main constituent. The other alkaloids are somniferine, somnine, somniferinine, withananine, tropine, pseudo withanine, pseudo tropine, cuscohygrine, anaferine and anhydrine.
Externally it has been applied as a poultice to boils, swelling and other painful parts.

Capsicum: The fruit of most species of Capsicum contains capsaicin (methyl vanillyl nonenamide), a lipophilic chemical that can produce a strong burning sensation in the mouth of the unaccustomed eater. Most mammals find this unpleasant, whereas birds are unaffected. The secretion of capsaicin protects the fruit from consumption by mammals while the bright colors attract birds that will disperse the seeds.
Capsaicin is present in large quantities in the placental tissue (which holds the seeds), the internal membranes and, to a lesser extent, the other fleshy parts of the fruits of plants in the genus Capsicum. Contrary to popular belief, the seeds themselves do not produce any capsaicin, although the highest concentration of capsaicin can be found in the white pith around the seeds.
Capsicum is commonly used to buffer pain from other ailments, including arthritis, varicose veins, headaches, menstrual cramps and respiratory conditions such as asthma.

Capsaicin is a chemical found in hot peppers that has the ability to block the nerves involved in bladder spasticity and subsequently, reduce its pressure.

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