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A literature review of the Hrutpatri (Digitalis purpura/ alba) in Ayurvedic and contemporary science.

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Abstract:

Hrutpatri (Digitalis purpura/ Alba) comes under the cardiac poison in Agadtnatrra. ***Digitalis purpurea***, the **foxglove** or **common foxglove**, is a toxic species of flowering plant in the plantain family Plantaginaceae, native to and widespread throughout most of temperate Europe. It has also naturalized in parts of North America, as well as some other temperate regions. The plant is a popular garden subject, with many cultivars available.

This article is focusing on the drug Hrutpatri from agadtantra & medicinal point of view.

Keywords: Hrutpatri,

Objectives: To review cardiac poisons Hrutpatri, their signs and symptoms of toxicity according to ancient Ayurvedic and modern literature

Introduction:

The meaning of Digitalis Purpura tall leafy European biennial or perennial having spectacular clusters of large tubular pink-purple flowers; leaves yield drug digitalis and are poisonous to livestock.[1]

DIGITALIS PURPUREA 'ALBA' (GARDEN FOXGLOVE)- Although foxglove is a very poisonous medicinal plant, it beguiles with its extraordinary beauty. The white, fairytale-like flowers transform the garden into an almost magical place.[2]

Names: Botanical

Digitalis Purpurea

Hindi – Tilpushpi

Sanskrit – Dhumrapushpi, Tilpushpi, Hrutpatri.

English names: Lady's glove, purple foxglove.

Synonyms: Dhumrapushpi, Tilpushpi, Hrutpatri, foxglove or common foxglove.

Family – Plantaginaceae.

Description:

Digitalis purpurea is an herbaceous biennial or short-lived perennial plant. The leaves are spirally arranged, simple, 10–35 cm (3.9–13.8 in) long and 5–12 cm (2–5 in) broad, and are covered with gray-white pubescent and glandular hairs, imparting a woolly texture. The foliage forms a tight rosette at ground level in the first year.[3]

Chemical constituent:[4]

Cardiac glycosides, volatile oil, fatty matter, starch, gum and sugars. The Major plant derived cardiac glycosides were included digitoxin, digoxin, ouabain, oleandrin and proscillaridin, which were extracted from Digitalis purpurea, Digitalis lanata.

Toxicity: [5]

Due to the presence of the cardiac glycoside digitoxin, the leaves, flowers and seeds of this plant are all poisonous to humans and some animals and can be fatal if ingested.

The main toxins in *Digitalis* spp. are the two chemically similar cardiac glycosides: digitoxin and digoxin. Like other cardiac glycosides, these toxins exert their effects by inhibiting the ATPase activity of a complex of transmembrane proteins that form the sodium potassium ATPase pump, (Na^+/K^+-ATPase). Inhibition of the Na^+/K^+-ATPase in turn causes a rise not only in intracellular Na^+, but also in calcium, which in turn results in increased force of myocardial muscle contractions.

Symptoms of *Digitalis* poisoning include a low pulse rate, nausea, vomiting, and uncoordinated contractions of different parts of the heart, leading to cardiac arrest and finally death.

Effect of overdose of digitalis: Vomiting, Diarrhoea, urticaria, Headache, dysuria.

Treatment: Gastric lavage, Milk, Butter, Activated Charcoal in repeated dose.

Medicinal Properties:[6]

Guna - Laghu, Rooksha

Rasa - Tikta

Vipaka - Katu

Veerya - sheeta

Srotogamitva:

Dosha : Kaphaghna, vataghna.Pitta vardhak

Organ : Heart.

Part used: - Dried Leaf

Dose – 500 mg of powder leaf .

Traditional Uses: Earlier, Digitalis species were used to treat ulcers, boils, abscesses, headaches, and paralysis. Externally, digitalis species were used for the granulation of poorly healing wounds and to cure ulcers. After William Withering work, the digoxin is isolated from Digitalis species as a life-saving cardiac drug. Digitalis has long been used as a treatment for heart failure in addition to a range of other traditional uses.

Uses:

Digitalis purpurea: The medicinal parts are the dried leaves (in powder form), the ripe dried seeds, the fresh leaves of the 1-year-old plant or the leaves of the 2-year-old plant collected at the beginning of flowering.

Pharmacological Effects: Cardiovascular Effects: Cardiac glycosides are often called digitalis or digitalis glycosides, in particular, digoxin and digitoxin, have been a cornerstone of the treatment of heart diseases for more than two centuries. However, the identification of angiotensin converting enzyme inhibitors, β-adrenergic blockers and angiotensinreceptor blockers has significantly reduced their clinical use. The cardiac glycosides are with low therapeutic index. They possessed many cardiovascular effects by many mechanisms.[7]

Research:

Antitumor Activity: Recent research has shown the anticancer effects of digitalis compounds, suggesting their possible use in medical oncology D. purpurea were identified as having cytotoxic properties, including cytotoxic activity, and warrant further study.[8]

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Discussion:

Extracted from the leaves, this same cardiac glycoside digitoxin is used as a medication for heart failure. Digitalis and the cardiac glycoside derived from the foxglove (Digitalis purpurea) are perhaps the classic example. They represent a widely used group of clinically effective compounds which produce positive inotropic effect on the failing heart as well as having value in the treatment of atrial fibrillation.

Digitalis purpurea (foxglove) Important cardiac drugs are derived from foxglove, including digitalis that helps to increase the force of contraction of the heart muscle. However, the effect of cardiac glycosides is dose dependent and has a very narrow therapeutic range, i.e., slight overdosage induces toxicity.

Digitalis has long been used as a treatment for heart failure in addition to a range of other traditional uses. The plant is cultivated as an ornamental.

Conclusion:

1. Digitalis purpurea is an Ayurvedic plant used in the treatment of cough, asthma, fever, cardiac diseases, edema and impotency.
2. Digitalis directly increases the contractile power of the heart muscle, enabling a disease-weakened heart to keep up with the body's demand for heart action.
3. Digitalis has long been used as a treatment for heart failure in addition to a range of other traditional uses. The plant is cultivated as an ornamental.

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