



A CARDIAC GLYCOSIDES: DIGITALIS

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ABSTRACT

Digitalis glycosides remain the principal drug utilised in the management of congestive heart failure and cardiac arrhythmias. The properties of all cardioactive glycosides are similar in increasing the contractile strength of the myocardial fibre. The mechanism for this appears to be inhibition of membrane Na-K ATPase and its subsequent effect on calcium movement in the sarcomere. Recent data suggest other factors may be operative as well. Digitalis slows the heart through vagal and direct myocardial effects, thus the salutary effect in arrhythmias.

KEYWORDS

Cardiac glycoside, Limb, Pericycle, Trichomes

INTRODUCTION

Digitalis is Latin for “finger of a glove,” which refers to the shape of the flowers. All Digitalis species are biennial or perennial herbs, rarely small shrubs with simple, alternate leaves, which are often crowded in basal rosettes. Flowers are zygomorphic and arranged in terminal, bracteate racemes, and vary in color with species, from purple to pink, white, and yellow. The calyx is equally five-lobed and shorter than the corolla tube. The corolla, with a cylindrical-tubular to globose tube, is often constricted at the base and the limb is more or less two-lipped. The upper lip is usually shorter than the lower, which is spotted or veined inside (Br€auchler et al. 2004). Several Digitalis species are used therapeutically, as they are the main source of cardiac glycosides and most of them are of great ornamental value.[1]

SYNONYMS

- Tanacetum
- Foxglove
- Digitalis-glycoside
- Digitalin

BIOLOGICAL SOURCE

Digitalis, drug obtained from the dried leaves of the common foxglove (*Digitalis purpurea*).[2]

FAMILY

It belong to the family of Plantaginaceae.

GEOGRAPHICAL SOURCES

It is mainly found in England, Germany, France, North America, India, Iraq, Japan, Kurdistan, Mexico, Nepal, Spain, Turkey. Digitalis is a biennial herb growing wild but good quality of the drug is obtained especially from cultivated plant.[3]

ORGANOLEPTIC PROPERTY



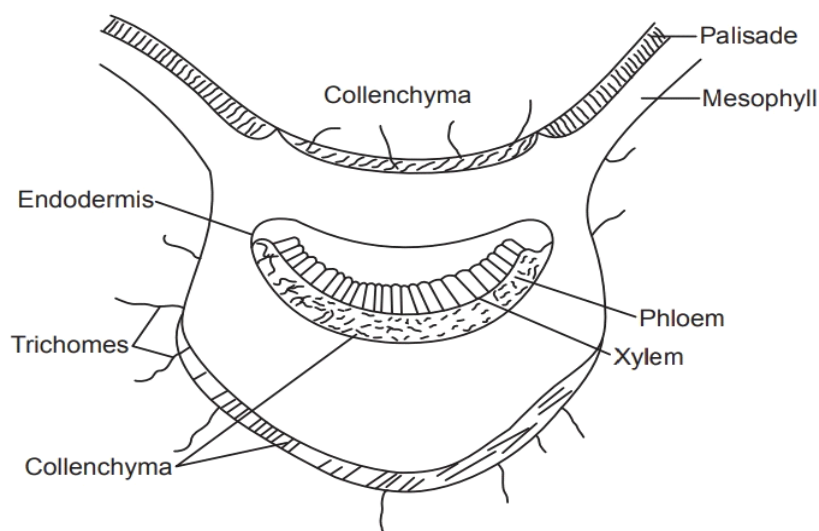
DIGITALIS

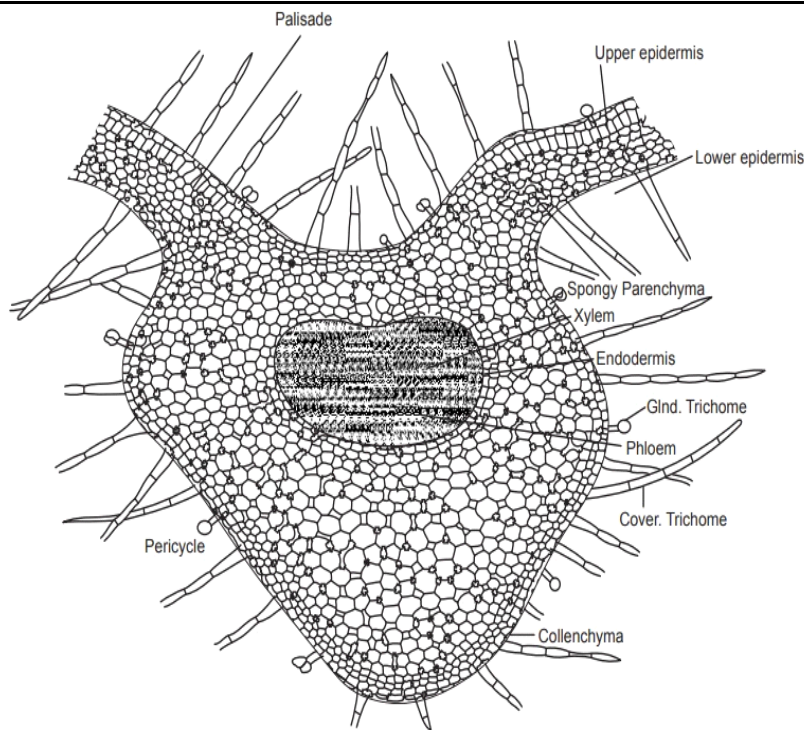
- Color is dark grayish green.
- It is odourless.
- Taste is distinctly bitter.
- Length is 10-30 cm and width is 4-10 cm.
- Shape is may be ovate,lanceolate or petiolate.

- Margin of leaves are crenate or dentate.
- Base of leaves are decurrent or dentate.
- Apex is subacute.
- Both surfaces of leaves are pubescent.
- Generally it appears broken or crimped.[4]

HISTOLOGICAL PROPERTY

Digitalis has dorsiventral leaf structure. It has plenty of simple covering and glandular trichomes on both the surfaces. The covering trichomes are uniseriate, usually three to four cells long, having collapsed cells, acute apex and finely warty cuticle. The glandular trichomes have a short, unicellular stalk and bicellular or rarely unicellular head. It has anomocytic or ranunculaceous type of stomata. Trichomes and stomata are more in lower surface. The pericycle is parenchymatous above and collenchymatous below. Calcium oxalate crystals are absent.[5]





T.S Of Digitalis

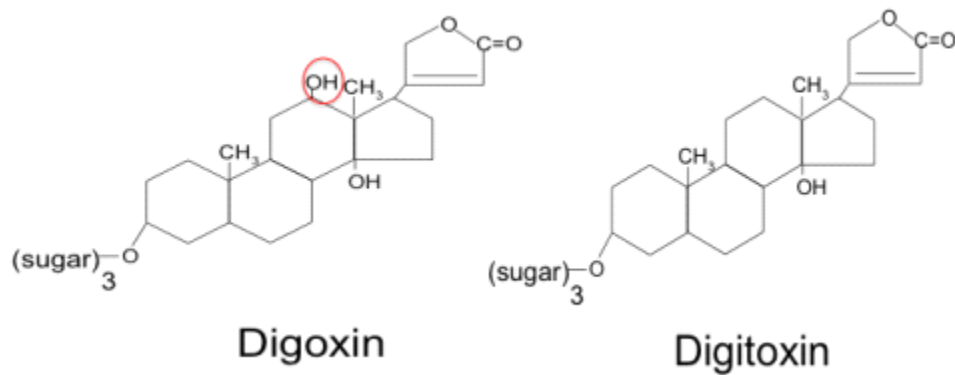
CULTIVATION AND COLLECTION

Digitalis is a biennial herb growing wild but good quality of the drug is obtained especially from cultivated plant. The plant will flourish best in well drained loose soil, preferably of siliceous origin, with some slight shade. The plants growing in sunny situations possess the active qualities of the herb in a much greater degree than those shaded by trees, and it has been proved that those grown on a hot, sunny bank, protected by a wood, give the best results.[6]

It grows best when allowed to seed itself, if it is desired to raise it by sown seed, 2 lb of seed to the acre are required. For cultivation special strains of the seeds are selected which would produce disease-resistant plants with maximum activity. Attention is specially paid to the structure of the soil in seed beds. As the seeds are so small and light, they should be mixed with fine sand in order to ensure even distribution. Before sowing soil is sterilized. They should be thinly covered with soil. The seeds are uncertain in germination, but the seedlings may be readily and safely transplanted in damp weather, and should be pricked out to 6–9 inches apart. Sown in spring, the plant will not blossom till the following year. Seeds must be gathered as soon as ripe. In dry season sufficient water is supplied to the plant. In the first year, a long stalk with rosette of leaves is produced. The flowers of the true medicinal type must be pure, dull pink or magenta, not pale-coloured, white or spotted externally.[6]

CHEMICAL CONSTITUENTS

The primary glycosides are purpurea glycosides A and B. It also contains Odoroside H, glucogitaloxin. Verodoxin and glucoverodoxin. The digitoxigenin, Digitoxin, Digoxin, Gitoxigenin, gitaloxin are also important medicinal compounds. They are also called secondary glycosides. They contain anthraquinones derivatives like digitolutin, methoxy-2 methyl anthraquinones, etc[7]



PHARMACOLOGICAL VALUE

- Digitalis is used to treat congestive heart failure (CHF) and heart rhythm problems (atrial arrhythmias).
- Digitalis can increase blood flow throughout your body and reduce swelling in your hands and ankles.[8]

CONCLUSION

In this review literature we are discussed above the Digitalis. It is broadly used in medical field. These are consist of following chemical constituents each and every constituents are play various pharmacological value.

ACKNOWLEDGE

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REFERENCES

1. Arrillaga I, Brisa MC, Segura J (1987) Somatic embryogenesis from hypocotyl callus cultures of *Digitalis obscura* L. *Plant Cell Rep* 6:223–226
2. [https://www.google.com/search?xsrf=ALeKk00omQGw7jAKv8Ki9Oz5I-KVN_gZAw%3A1610543363110&ei=A_H-X9-VBsXA3LUPt_-HiAI&q=biological+source+of+digitalis&oq=geographical+source+of+digitalis&gs_lcp=CgZwc3ktYWlQARgAMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHUABYAGCoqAlAHAcAAQAQCSAQCYAQCAQdnd3Mtd2I6yAEIwAEB&scient=psy-ab](https://www.google.com/search?xsrf=ALeKk00omQGw7jAKv8Ki9Oz5I-KVN_gZAw%3A1610543363110&ei=A_H-X9-VBsXA3LUPt_-HiAI&q=biological+source+of+digitalis&oq=geographical+source+of+digitalis&gs_lcp=CgZwc3ktYWlQARgAMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHMgQIABBHUABYAGCoqAlAHAcAAQAQCSAQCYAQCAQdnd3Mtd2I6yAEIwAEB&scient=psy-ab)
3. <https://www.google.com/search?q=geographical+source+of+digitalis&oq=GEOGRAP HICAL+&aqs=chrome.1.69i57j0i67i457j0j0i433j0l2j0i433j0.10141j0j4&sourceid=chrome&ie=UTF-8>
4. <https://gpatindia.com/digitalis-biological-sourcesmedicinal-uses-morphological-features-and-mcqs/#>
5. <http://www.pharmacy180.com/article/digitalis-leaves-174/#:~:text=Digitalis%20has%20dorsiventral%20leaf%20structure,apex%20and%20finely%20warty%20cuticle.&text=Trichomes%20and%20stomata%20are%20more%20in%20lower%20surface.>
6. <https://www.google.com/search?q=cultivation+and+collection+of+digitalis&oq=cultivation&aqs=chrome.0.0i67i457j69i57j46i67j0l4j0i433.10502j0j7&sourceid=chrome&ie=UTF-8>
7. <https://www.yourarticlelibrary.com/biology/glycoside/digitalis-sources-cultivation-and-uses-with-diagram/49758#:~:text=Cultivation%20and%20collection%3A,of%20flowers%20are%20fully%20developed.>
8. https://www.google.com/search?xsrf=ALeKk00owPRnxMfWqE1Y8F3ecB1patveAQ%3A1610545943661&ei=F_v-X-TiJ9Kr3LUPx4y3uAw&q=therapeutic+use+of+digitalis&oq=pharmacological+use+of+digitalis&gs_lcp=CgZwc3ktYWlQARgAMgkIABDJAxAWEB4yBggAEBYQHjoECAAQRzoHCAAQyQMMDToECAAQDToICAAQCBA NEB46CAghEBYQHRAeUNFLWNZxYISFAWgAcAF4AIAB-QOIAa0ekgEJMi05LjluMS4xmAE AoAEBqgEHZ3dzLXdpesgBCMABAQ&scient=psy-ab