Pharmacognosy of cinchona

Vishal Prajapati, Pyiush Yadav, Ajeet Kumar Kannauiya, Ravikant Vishwakarma, Akshay Pratap Yadav

Department of pharmacy, Prasad Institute of Technology, Jaunpur (UP), India

ABSTRACT

The near about 350,000 species of plants are found in the earth and these plants have the great medicinal value. The plant of Cinchona is also known as Jesuit’s bark, Peruvian bark and cinchona bark which is belong from the family of Rubiaceae. It produces the yellowish to green colored in short ruptur to outer surface and which is inner surface is yellow, brown, deep reddish to brown colored, different-2 species inner surface of color is different. The cinchona bark are the consist of 30 types of alkaloids, which belong to quinoline group but mainly quinidine, quinine, cinchonina and cinchonidine are the play the vital role in medicinal field. Quinine are mainly used to treatment of malaria and other alkaloids are producing the various medicinal properties such as analgesic, antipyretic, protoplasmic, cardiac arrhythmia, dyspepsia, gastric catarrh and cardiac depressant.

KEYWORDS

Introduction, Biological source, Geographical source, Botanical classification, Organoleptic property, Microscopic property, Cultivation and collection, Chemical constituents, Pharmaceutical uses

INTRODUCTION

The cinchona is a larger shrub or small tree is domestic or born to South America. Cinchona bark is also known as Peruvian bark or Jesuit’s bark, it is famous his medicinal properties. These are the contain various types of alkaloids such as Cinchoninie, Cinchonidine, Quinine, Quinidine and Quinamine etc. It’s most valuable alkaloids are the quinine used as antimalerial agent.[1] Cinchona is belong the family of Rubiaceae it consists of 23 species of trees and plant.[2]

*Cinchona pubescens* - flowers
SYNONYMS [3]

- Jesuit's bark
- Peruvian bark
- Cinchona bark

FAMILY - Rubiaceae

BIOLOGICAL SOURCE

It is cultivated by the dried bark or root of cinchona species like Cinchona calisaya wedding, C. Ledgeriana Moens, C. officinalis Linn, C. succirubra Puv.ex – klotzsch .[4][5]

GEOGRAPHICAL SOURCE

Cinchona is found in various countries like India, Columbia, Ecuador, Peru, Tanzania, Guatemalan, Indonesia, Bolivia and Sri Lanka. They are cultivated in West Bengal area in India like Annamalai hills (Coimbatore district) and Nilgiri hills (Nilgiri district) in Tamil Nadu and in Darjeeling. [6]

BOTANICAL CLASSIFICATION [7]

Kingdom  Plantae – Plants

Subkingdom  Tracheobionta – Vascular plants

Superdivision  Spermatophyta – Seed plants

Division  Magnoliophyta – Flowering plants

Class  Magnoliopsida – Dicotyledons

Subclass  Asteridae

Order  Rubiales

Family  Rubiaceae – Madder family

Genus  Cinchona L. – cinchona

Species  Cinchona officinalis L. – quinine

ORGANOLEPTIC PROPERTIES
- Its outer surface is the yellowish to green colored and they have color appear short ruptur.
- Its different species inner surface is differ.
- Its inner surface some colors like yellow, brown, deep reddish to brown.
- The tast of cinchona bark is highly bitter and astringen, its odour is distinctive.
- Its leave size is 10-40 cm long.[8]

**MICROSCOPIC PROPERTIES**

Cinchona realistic characters show in the bark. The cork cell of cinchona are thin-walled, come after by phelloderm. The cortex of cinchona contains of several secretory channels and phloem fibers. Medullary rays with spiralling arranged cell is present. Idioblast of calcium oxalate are the fixed characteristic of cinchona bark. The parenchymatous tissues under the present the starch grains. Stone cells are infrequently present in the structure. These are a few cork cells is harder. Medullary rays are the broad in 2 to 3 cells.[9]

**CULTIVATION AND COLLECTION**

Cinchona is cultivated by seed sowing method. The seed nearly by the 3mm long and flat are harvest and they are used for cultivation. The seed is scatter in the boxes and the seedlings is transfored to nurseries they are gain 5cm height, the nurseries is protected by the ceiling covering from the direct sunlight contact. The seedlings grown under coolness they attain a height above 25cm and these period they are transplanted double. Cinchona is grows well at an height of 1500 – 2000m above sea level, temperature of rainfall of 200- 400cm. These plant is 1.5 years oldest these are transplanted in open space at a 1m distance into well drained, rich and porous soil.

The plant of cinchona grow upto six years and the first collection is collected by coppicing, uprooting or felling method. The cinchona bark is collected to the 9 years old plant because bark containing alkaloids decreases afterward. [10]
CHEMICAL CONSTITUENTS

- Alkaloids are considerable chemical constituent of chinchona.
- Cinchona bark containing about 30 types of alkaloids, which belong to quinoline group.
- The important alkaloids of cinchona bark is quinidine, quinine, cinchonina and cinchonidine.
- These 4 chemical constituents are present in bark they are stereoisomers of each other.
- Cinchona may be present other chemicals like quiniarine, cinchotine, hydroquinine, hydrocinchonidine and cinchotannic acid.
- Methoxyl group like quinidine and quinine is present but no methoxyl group like chinchonine and cinchonidine is present.
- Starch grains and bitter glycosides is present in cinchona.
- They are also contain crystalline acid and calcium oxalate like quinic acid.
- The total alkaloids not less than 6.5 percentage in cinchona.
- The cinchona contains 30 to 60 percentage of quinine alkaloids.[8]

PHARMACEUTICAL USES

- Cinchona is a official phytomedicine, which are used formulation of quinine from the cinchona species, these are used for anti-fever agent. It is very useful in prevention and treatment of malaria. Other alkaloids like chinchonine, cinchonidine and quinidine are extracted from this tree.
- These are also produce analgesic, antipyretic and protoplasmic properties.
- These are used for bitter stomach and toxic.
- If the quinidine are producing cardiac depressant property.
- They are treats rheumatism and neuralgia.
- These are also used to treatment of cardiac arrhythmia.
- These are also used in antiseptic and also useful in diseases such as abscesses, cavities and ulcers.
- These are also used to treatment of dyspepsia and gastric catarrh.[11]

CONCLUSION

In the review literature we are discussing for the cinchona. It is widely used in pharmaceutical field. These are contains for the various types of alkaloids like quinine, quinidine, cinchonine and cinchonidine etc they have antimalarial property which have vital role in pharmaceutical field. Cinchona is popular for antimalarial property but as well as it have analgesic, antipyretic, protoplasmic, rheumatism, neuralgia, cardiac arrhythmia, cardiac depressant property.
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