



Literature Based Pharmacochemical Information of *Caesalpinia pulcherima*

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Introduction

The Worldwide the use of plant as medicine has a long history and several modern drugs are of plant origin. The discovery of drugs from plants has mainly relied in ethno medical use of plants. In their recent review of current marketable drugs, [1] identified 122 compounds of defined structure, obtained from 94 species of plants that are used globally as drugs and with the report revealing that 80% of these have had an ethno medical use identical or related to the current use of the active elements of the plant.

In Tanzania the use of medicinal plants is also well known in many communities. In many rural areas of Tanzania, the primary health care facilities are either insufficient in terms of numbers and health services or distantly located from where some of communities live. Also the medical charges though small are not affordable to many people due to low annual income [2]. The situation has resulted to many people opting for medicinal plants as alternatives to modern medicines [2]. A recent Ethno medical survey on the use medicinal in just one community of Katoro in Bukoba, revealed 33 medicinal plants which were well supported by literature, with 47 % of the claims having already been reported [3]. Similar findings have been obtained from a study by [2] whereby a total of 45 plant species were recorded as medicinal plants in Udzungwa Mountains, Iringa region. This brief background is indicative of the vast potentials of plant based therapies that need continued research to ascertain their toxicities and proof of traditional therapeutic claims.

Distribution of the Traditional Medicinal use of *Caesalpinia pulcherima*

This plant belongs to the family caesalpinaceae, it is a large perennial shrub or small tree widely distributed in tropical areas. It is an ornamental plant and has adopted different common name including Poinciana, Peacock Flower, Red Bird of Paradise, Mexican Bird of Paradise, Dwarf Poinciana, Pride of Barbados and Flamboyant-jardi.

Several medicinal use of the plant has been recorded in various communities in the world. In India information indicated that the stem of the plant is used as abortifacient and emmanagogue while fruits are employed for cure of diarrhea and dysentery [4]. Pranith anchai [5] reported that decoction from roots; barks and leaves are used in alleviating fungal infections and reduction of fever. Elsewhere the plant has been reported to be a tonic and stimulant. Roots are astringent; given in cholera, and infantile convulsions. Leaves are

purgative, infusion of the flower is febrifuge prescribed in bronchitis, asthma, malaria fever, intestinal worms, coughs and chronic catarrh. In Tanzania there is virtually no information available on traditional use of the plant in the Tanzania. However, recently we have received information from "Ayi Institute of Research and Medical Consultancy", Under Management of Dachi Group of Company, on the use of this plant for treatment of human that prompted the further search of information on this plant.

Chemical Constituents of *Caesalpinia pulcherima*

Research finding from diverse areas reports the main chemical compositions of the plant to Diterpenoids and Favonoids, Diterpenoids have been isolated are from the stem [5,6], while Flavonoids have been isolated from the leaves of the plant [3,7]. Other chemical constituted which are found from the research information indicates that Barks of the plant contains Ellegitanins, Quercimeritrim, Leucodelphinin, Sitosterol, Sebacic acid, Gallic acid and Ellagic Acid. Leaves contain a Glyceride, Myricitroside. Flowers contain Cyanin, Sitosterol, Lepeol, and Saccharides. fruits are rich in Tannins, Seeds contain Lectins [8].

Reported Biological Activities of the Plant

As reported above the main chemical constituents of the genus are diterpenoids and flavonoids. While flavonoids are well known for their antioxidant and many other biological activities, terpenoids have also been reported to be several similar biological activities. The combination of two classes of compound synergized with many other minor compounds could be responsible for varied reported biological activities of the plant.

Recent investigations have reported a strong inhibition of nitric oxide, an inflammation mediator causing inflammation in many organs [4], Thus the plant has been reported as a strong ant inflammatory agent. Different parts of this plant have also been reported to have antimicrobial activities [4,7,9]. Result from invitro evaluation of different compound from this plant reveals a moderate to good activities against gram positive bacteria [7].

Discussion and Conclusion

Caesalpinia pulcherima [5] has been reported to contain flavonoids and diterpenoids. Flavonoids and related derivatives are have been used in treatment of various ailments and in food industry use for many years. The data indicated that flavonoids possess many pharmacological activities like ant ulcer, ant ageing, ant bacteria, ant oxidant, ant fungal, ant inflammatory, ant diabetic, ant hepatotoxic, ant allergic, ant cancer, ant tumor and vasodilator properties. Also flavonoids show potential Vitamin C sparing activity and activities of lipooxygenase, cyclooxygenase, protein kinase C, tyrosine kinase etc.

Majority of flavonoids are powerful ant oxidants that helps neutralize harmful free radicals and prevent oxidative stress which damaged cells and DNA. And which can lead to aging and degenerative diseases like Cancer and Alzheimer's or Parkinson's diseases [10], Flavonoids normally enhances the effects of the other antioxidant vitamins, and increases level of glutathione, an important and powerful antioxidant, normally works with vitamin C to strengthen and protect your blood vessel structure, and reduce prolonged bleeding, bruising and nosebleeds. flavonoids may help

prevent and treat cataracts, reduce the risk of cardiovascular disease and heart attack by lowering LDL Cholesterol level and stopping blood platelets from clumping. Which minimizes blood clotting and prevents buildup of atherosclerotic plaque on artery walls [10]. Further, Quercetin one of the known flavonoids has natural ant histamine and ant inflammatory properties. Also has got ant biotic like effect due to ant viral and ant bacterial activity, and also ant allergic and ant inflammatory properties and proved clinically in the treatment of hemorrhoids and varicose veins [10].

The biological and ecochemical functions of terpenes have not yet been fully investigated. Many plants produce volatile terpenes in order to attract specific insects for pollination or otherwise to expel certain animals using these plants as food. Less volatile but strongly bitter tasting or toxic terpenes also protect some plants from being eaten by animals commonly known as antfeederants [11]. Also terpenes play an important role as signal compounds and growth regulators (Phytohormones) of plants, as shown by preliminary investigations. Many insects metabolize terpenes they have received with their plant food to growth hormones and pheromones [11]. Thus, the abortifacient and emmanagogue of this plant could be linked to the presence of terpenes. This tally well effect of prostaglandins which is natural terpene and have been recorded with similar biological effect.

Way forward

The chemical constituents, biological activities and traditional use of *Caesalpinia pulcherima* are well documented. However, data on in vivo studies is lacking for both toxicity and efficacy. On the other hand the fact that the plant has been in long use as medicinal plant may not necessitate the evaluation of in vivo toxicity studies while the proof of claim in human through systematic observational studies is of significant.

Not below

For the human advantage I invited all Medical Research, Pharmaceutical industry, Investors to finish our proof of concept clinical observation of study of *Caesalpinia pulcherima*.

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