

Gloriosa superba L., an important medicinal plant

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SUMMARY

Present paper deals with the study of one of the rare, poisonous, ethnomedicinally and therapeutically important plant *Gloriosa superba* L. At present the plant is on the way of extinction due to its misuse, over exploitation and unscientific collection. It is listed in the red data book. Tubers are used by the tribals of Akola taluka, Ahmednagar district (M.S.) in the treatment of cancer, malaria, stomachaches, piles and leprosy. Tubers are also employed in abortion (60mg) and as an antidote for snakebites and scorpion-stings. Leaves are used in the treatment of asthma. Though the plant is supposed to have definite medicinal properties, it also confirms some lethal substances that are unsafe to the patient. Therefore, there is a need for finding the actual chemical compound present in the plant that is therapeutically important so as to avoid the unsafe chemicals like gloriosine and colchicine.

Key words : *Gloriosa*, Rare, Red data book, Tribals, Colchicine

Medicinal plants are in great demand in pharmaceutical companies and to the local herbalists, as they have occupied an important place as a raw material in preparation of many important drugs. Ethnomedicine or folk medicine has got a new life due to the new discoveries of some remarkable plant uses. Many plants like *Ephedra*, *Panax*, *Rauwolfia*, maize, rubber etc. used in industries today are developed and identified through ethnic knowledge. The drugs like morphine, atropine, guggulin, vinblastin, vincristine, ephedrine, quinine and colchicines used in modern system of medicine are also developed from Ethnomedicine (Jain, 1987).

Present paper deals with the study of one of the rare, poisonous, ethnomedicinally and therapeutically important plant *Gloriosa superba* L. Plant contains gloriosine, N-formyldeacetylcolchicine, demethylcolchicine, colchicine and lumicolchicine, colchicoside, 2-hydroxy-6-methoxybenzoic acid, chelidonic acid and β -sitosterol glucoside (Duke, 1985 and Akhtar *et al.*, 1992). About 0.385% and 1.013% colchicine is present in the tubers and seeds of *G. superba*, respectively.

MATERIALS AND METHODS

Ethnomedicinal knowledge of tribal people about the plant was documented by arranging frequent field visits to the study area. Photograph of the plant along with

flower was taken with the help of Nikon 3.5 mega pixel camera. A minor detail like vernacular name of the plant species, locality, habitat and ethnomedicinal uses was noted in the field notebook by interviewing the tribal vaidyas. Each medicinal use of the plant had been confirmed during several visits to different localities in the area and also from the same informants on different occasions.

Collected plants were identified with the help of keys to families, genera and species provided in standard Floras like Flora of Bombay Presidency (Cooke, 1901-1908 Vol. 1-3), Flora of Ahmednagar district (Pradhan and Singh, 1999), Flora of Maharashtra State Vol. I (Singh and Karthikeyan, 2000), Flora Maharashtra State Vol. II (Singh *et al.*, 2000) and Flora of Maharashtra State Vol-III (Sharma *et al.*, 2000). Books referred for comparison of uses recorded during the field studies and for listing chemical constituents of the plant were A Dictionary of Indian Medicinal Plants (Akhtar *et al.*, 1992), Pharmacognosy 2nd Ed. (Trease and Evans, 1978), Indian Materia Medica (Nadkarni, 1954), Compendium of Indian Medicinal Plants Vol.1-3 (Rastogi and Mehrotra, 1991-1993).

RESULTS AND DISCUSSION

Gloriosa superba L. belongs to family Liliaceae. It is a perennial herbaceous climber with orange-red flowers, found in Bhandardara region (Akole tahsil) of Maharashtra state. At present the plant is on the way of extinction due to its misuse, over exploitation and unscientific collection. It is listed in the red data book.

Tubers are used in the treatment of cancer, malaria, stomachaches, piles and leprosy by the tribals of Akole taluka, Ahmednagar district (M.S.). Tubers are also

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employed in abortion (60mg) and as an antidote for snakebites and scorpion-stings. Leaves are used in the treatment of asthma.

Crude extracts or tuber paste is used to overcome above-mentioned disorders, but the chemical compounds present in *Gloriosa i.e.* a pale yellow to greenish yellow alkaloid colchicine and gloriosine are mainly responsible for the toxic effect. The toxins in *G. superba* encompass an inhibitory stroke on cellular division resulting in diarrhoea and depressant action on the bone marrow. After ingestion of tubers, initial symptoms develop within two to six hours. Intense vomiting, numbness and tingling around the mouth, burning and rawness of the throat, nausea, abdominal pain and bloody diarrhoea leading to dehydration etc. are some of the primary symptoms developed initially in the victim. The other important complications include respiratory depression (Angunawela and Fernando, 1971). Progressive paralysis of the central nervous system and peripheral nervous system was

reported by Wijesundere (1986). Colchicine affects cell membrane structure indirectly by inhibiting the synthesis of membrane constituents (Craker and Simson, 1986). Gloriosine also has an antimitotic effect (Gooneratne, 1966).

Conclusion:

Though the plant is supposed to have definite medicinal properties, it also confirms some lethal substances that are unsafe to the patient. Therefore, there is a need for finding the actual chemical compound present in the plant that is therapeutically important so as to avoid the unsafe chemicals like gloriosine and colchicine. At present colchicine is obtained from *Colchicum autumnale*. Separation of chemical constituents from *G. superba* will also help for the extraction of colchicine and gloriosine compounds that are necessary for the research experiments. There is a need for the conservation of this ethnomedicinally important plant.

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