



KALANCHOE LACINIATA (L.) DC: A LESSER KNOWN INDIAN MEDICINAL PLANT

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ABSTRACT

Kalanchoe laciniata(L.) DC.(Family: Crassulaceae), commonly known as ‘Christmastree plant’ has a long history of traditional medicinal uses. Traditionally, the plant is used for treating common cough and cold, wounds, inflammation, diabetes etc. Further, the plant is reported to contain cardiac glycosides. In spite of several important ethnopharmacological uses, the plant has not been much explored by the researchers so far. This review will inspire the future investigators for further screening of the plant to expedite the natural drug discovery process.

Keywords: Kalanchoelaciniata(L.) DC., Crassulaceae, Ethnopharmacology, Phytochemistry, Cardiac glycosides, Bufadienolides.

INTRODUCTION

The genus 'Kalanchoe' consists of about 125 species of tropical, succulent flowering plants belonging to the family Crassulaceae. These plants are cultivated as ornamental plants [1]. In the past, the genus was divided into three genera: Kalanchoe, Bryophyllum, and Kitchingia. But today, most botanists recognize it as one genus [2]. In the United States, Kalanchoe species are primarily ornamentals and houseplants, but some have escaped cultivation and can be found in the wild, especially in Florida and Hawaii [3].

Kalanchoelaciniata(L.) DC. (Fig. 1), popularly known as 'Christmastree plant' is an erect stout perennial shrub. The plant is believed to be native to Brazil, Africa, Yemen and India but found well distributed in Burma, Ceylon, Tropical Asia and other African countries. In India it is distributed in Bengal, in the Deccan and hilly areas of south India up to an elevation of 3000 ft. [4-6]. The plant is popularly known as Hemasagara in Sanskrit and Hamsagar in Hindi in India. The plant grows up to a height of 0.9-1.2 m. The stems are succulent, glabrous or more or less pubescent and slightly branched. Leaves are numerous, large and very succulent, 7.5 cm-10 cm long. The petiole is 2.5 cm-3.8 cm long, flattened above, fleshy and amplexicaul. The blade is narrow oblong, acute, dentate, serrate or crenate. The middle stem leaves more or less deeply pinnatifid, the uppermost entire or nearly so. The leaves are glossy and pale glaucous to green in colour. The flower occurs in panicle cymes. The calyx is 3-5 mm long, glabrous or glandular- pubescent. Corolla is 1.6 cm long and comprises of 4 orange or yellow petals which are lanceolate, acute or acuminate, glabrous or pubescent. A few hypogynous scales of 3-4 mm long are present. The fruits are 8 mm long follicles which are ventrally dehiscent [4, 5].



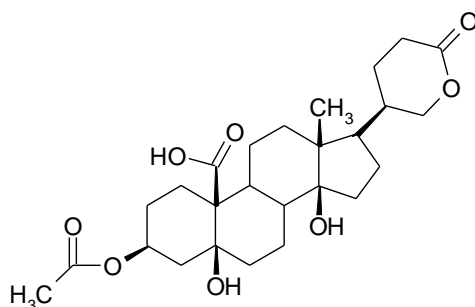
Figure 1: Photograph of *Kalanchoelaciniata*(L.) DC. [7]

Ethno pharmacology:

The leaves of this plant is medicinally important and many reports on claims to cure several diseases in traditional system of medicine particularly in folklore. Traditionally, the crushed leaves are used to make counter irritant remedies all over Asia. In Malaysia, a poultice of the powdered leaves is used for coughs and colds, to soothe inflammation, heal boils and wounds and used in lotions for small pox [4]. A decoction of the whole plant is drunk in gastric pain and heart discomfort. In the Philippines, the crushed leaves are used in headache. In Cambodia, Laos, and Vietnam, the crushed leaves are applied externally to reduce body temperature and to heal ulcers. In India the crushed leaves are applied to wounds, to soothe inflammation and taken orally to cure diabetes. The juice expressed from the leaves is drunk to treat bilious diarrhoea, dysentery, lithiasis and phthisis [8, 9]. It is also reported that the 'Palian' tribes in Sirumalai hills of Southern India use the leaf juice externally for joint pain [10]. The juice is used externally in bruises and burns and also to cure superficial ulcers. As a styptic, it is used on fresh cuts and wounds. In Indo China the pounded leaves are applied in indolent ulcers [5].

Photochemistry:

Different leaf extracts are reported to contain flavonoids, triterpenoids, lignins, phenols, saponins and glycosides [11]. Anderson *et al.*, 1983 [12] reported three toxic bufadienolides, one characterized as hellibrigenin 3-acetate, from the plant. Typical signs of cardiac glycoside poisoning, involving the gastro-intestinal, neuromuscular and cardiovascular systems were observed in both guinea-pigs (subcutaneously) and sheep (intravenously). The specific parietic syndrome, krimpsiekte (a chronic form of cardiac glycoside poisoning), on the other hand, was reproduced only by the repeated intravenous administration of smaller doses of the 2 unknown bufadienolides to sheep.



Hellibrigenin 3-acetate

Miscellaneous:

Jiaet *al.*, 1989 [13] reported the High frequency transformation of *K. laciniata* in cultures. Gordon *et al.*, 2008 [14] studied the invasive plants including *K. laciniata* in Florida using the Australian weed risk assessment.

Pharmacology:

No pharmacological work has been reported yet.

Pharmacognosy:

No systematic pharmacognostical studies on *K. laciniata* have been documented in the literature.

CONCLUSION

The thorough literature survey available from all scientific sources revealed very little scientific information on *K. laciniata*. The plant is reported to contain cardiac glycosides, in addition to other important groups of secondary plant metabolites like flavonoids, phenols, and saponins that are reported to possess several important biological activities. The important folklore application of the plant may reveal interesting results for the researchers. Therefore there is an urgent need for research on this plant to find out the possible pharmacological activities including discovery of new bioactive molecules. In this context, the paper will provide valuable information to the future investigators for further study.

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