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Phytochemical Investigation of *Adenocalymma alliaceum:* A Review

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Abstract
With a view to obtain new and better drug from natural source chemists and biologists have been attracted towards the traditional system of medicines for the past few decades. Chemical composition of plant derivatives includes diallyl disulphide, diallyl trisulphide, alliin, allicin, propylallyl, divinyl sulfide, diallyl sulfide, dimethyl sulfide, daucosterol, beta-sitosterol, fucosterol, stigmasterol, iridoides and isothiocyanates, naphthaquinone, alkaloids, saponins, flavones. The present paper is a study of medicinal properties of the some of the species belonging to family Bignoniaceae commonly used by the people in the rural areas and compounds isolated from *Adenocalymma alliaceum.*
Keywords
Adenocalymma Alliaceum

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INTRODUCTION
Modern synthetic medicines are not providing adequate relief to common people of developing countries due to their soaring prices and complicated side effects. With a view to obtain new and better drug from natural sources, therefore, chemists and biologists have been attracted towards the traditional system of medicines for the past few decades. The Ayurvedic and Unani systems of old Indian medicines have been alleviating human ailments for thousands of years. Further, it is also true that these medicines are harmless and cheaper. During the early years of development of human civilization, man had started using vegetable, animal and mineral resources available around him for medicinal, edible and poisonous purposes. He found that some plants had curative values in the treatment of different diseases. However, the use of plants as medicines is also dependent on curious and complex blend of experience, faith, superstitions, and sometimes wishful thinking. With the passage of time, it is a worldwide realization that naturally occurring compounds offer new and effective medicinal ingredients. This led to the involvement of workers all over the world in exploration of flora and fauna and their application for the treatment of human diseases. It gave directions to the development of a number of scientific and philosophic concept of ancient medicines, as compiled in Ayurveda in India, Pun Tea of China, History of Plants of Greek, Ebera Pepyrus of Egypt, Destmplicibus of Rome and Arabic Herbal of Arabs. These resources have served as rich reservoirs for basic reference to medicinal chemistry and still retain their importance as sources of several useful and harmless drugs. Extracts of some plants even in crude form are known to exert remarkable effects over biological systems. Such effects are due to certain chemical constituents present in plants and these are commonly known as active principles.'' In spite of tremendous development of synthetic drugs in the past few decades, active principles of plants

used in medicines have been isolated and characterized. These drugs are believed to be safer to use and pose less problems of side effects as compared to synthetic ones. This is the reason why plants have always been a major source for therapeutic agents in all systems of medicine. Because of different climatic and soil condition India offers richest sources of a variety of vegetation including medicinal plants. The present paper is a study of medicinal properties of the some of the species belonging to family Bignoniaceae commonly used by the people in the rural areas and compounds isolated from *Adenocalymma alliaceum*. The plant of *Amphicome emodi* Lindi.[1,2] is used as febrifuge and is a substitute for chirata. The genus *Begnonia*[3,4] is refrigerant. A number of species of this genus are valued chiefly for their ornamental and medicinal purposes. Some species like *B.rex* Putz., *B. griffithii* Hook. , *B. semperflorens* Link . & Otto. etc. are grown in gardens while *B. sutherl andii* Hook. (South Africa); *B. aptera* Roxb. (In La Reunion) and *B. acetosa* Vell. , *B. acida* Vell. , *B. bidentata* Raddi. , *B. cucullata* Willd. , *B. hirtella* Link *B. platanifolia* Schott. , *B. sanguninea* Raddi. , *B. undulata* Otto. (Brazil) are used in medicines. The juice is poisonous to leaches and is used for killing them when found in the nostrils of animals. *B. rex* Putz. Is used by some of the tea-planters in assam as a substitute for Rhubarb. The pulp prepared from the fruits of *Crescentia cujete* Linn. (Bilayati bel)[5,6] is diuretic, cooling and febrifuge and is applied in headache. In West Indies, a syrup is made from the pulp which is used in dysentery and as a protocal. A decoction of the bark is used in cleaing wounds. Root's bark of *Oroxylon indicum* Vent.[7-9] is of considerable importance in Hindu medicine system as it is an ingredient of the Dasmula. It is acrid, bitter, pungent, astringent to the bowels, cooling, aphrodisiac, tonic; increases appetite and is useful in "Vata" biliousness, fevers, bronchitis, intestinal worms, vomiting, dysentery, leukoderma, asthma and inflammation.The tender fruits are carminative and stomachic and seeds are purguative. The medicated oil prepared from its bark along with 'hurdi', is recommended for the sore. *Stereospermum suaveolens* DC[10] is described as cooling, sweet, diuretic and tonic. It is recommended in dyspepsia, dropsy and cough. Its bark is one of the ingredients in Dasmula. Flowers are taken in the form of a confection in an aphrodisiac. The pleasant tasting roots and flowers of *Stereospermum chelonoides* DC are prescribed as a cooling drink in fevers. Its tender fruits and flowers are used as vegetable by the natives of Western India. Extract obtained from the wood of *Stereospermum xylocarpum* Weight[12] and *Heterophragma roxburghii* DC is recommended as a remedy for scaly eruption on the skin. Seeds of *Dolichandrone rheedi* Seem. with ginger and Pavetta roots are administered in spasmodic affections and a decoction of its bark is used for preserving fishing nets. *D. falcata* Seem. is reputed to cause abortion and the bark is started to act as a fish poison.

Some species of genus *Adenocalymma* have also been reported to possess medicinal value. *Adenocalymma sagotti* and *A. peruvian* are used in combating infections. *Adenocalymma alliaceum* Mart. is a South America (Brazil) dicot and has migrated to other parts of the world. The web page www.theplantlist.org describes fourteen scientific name *(Adenocalymma alliaceam* and its 13 synonyms) The whole list is: *Mansoa alliacea* (Lam.) A.H.Gentry, *Adenocalymma alliaceum* (Lam.) Miers, *Adenocalymma obovatum* Urb., *Adenocalymma pachypus* (K.Schum.) Bureau & K.Schum., *Adenocalymma sagotii* Bureau & K.Schum., *Anemopaegma pachypus* K.Schum., *Bignonia alliacea* Lam., *Pachyptera alliacea* (Lam.) A.H.Gentry, *Pseudocalymma alliaceum* (Lam.) Sandwith, *Pseudocalymma alliaceum* var. macrocalyx Sandwith, *Pseudocalymma pachypus* (K.Schum.) Sandwith, *Pseudocalymma sagotii* (Bureau & K.Schum.) Sandwith, *Pseudocalymma sagotii* var. *macrocalyx* (Sandwith) L.O.Williams. It is widely found in India. *A. alliaceum* is an evergreen, climbing shrub and is commonly grown as ornamental plant in gardens. It is generally called 'Garlicbush' or 'Lahsunlata' (Hindi). The plant flourishes well on a rich loamy soil in hot and moist conditions. It is commonly propagated by layering but also cultivated by cuttings. It's leaves possess intense garlic smell and have been reported to have many biological activities. A volatile oil obtained from leaves showed strong fungitoxic activity and was found to be more active than some commercial fungicides. It is also found to be non-phytotoxic to the host plant stimulatory to nitrate reductase activity and able to prevent leaf-spot disease of paddy[13]. Further, the aqueous extract has exhibited good antimicrobial activity[14].

Compounds isolated from *Adenocalymma alliaceum*:
The compounds isolated by different workers are summarised in Table 1

Table-1

Compound Isolated	Plant Parts used	Extract
n-alkanes C25-C35, n-alkanols, 24-ethylcholest-7-ene-3β-ol, fucosterol, 3β-hydroxyurs-18-en-27-oic acid, 32-hydroxyhexatriacontan- 4-one, 19-hydroxyhexatriacontan-18-one, 34-hydroxy-8-methylheptatriacontan-5-one, pentatriacont-1-en-17-ol, β-sitosterol, stigmasterol[15,16]	Leaves	Petrol extract
allyl methyl trisulfide, allyl propyl trisulfide, dithiacyclopentene, allyl propyl disulfide, allyl methyl trisulfide, allyl isobutyl sulfide, allyl isobutyl disulfide, diallyl monosulfide, diallyl disulfide, diallyl sulfide, diallyl trisulfide, diallyl tetrasulfide, 3-vinyl-1,2-dithi-4-en, allyl tri-sulfite, tetrasulfite, di-2-propinil, trisulfide, di-2-propenyl, 1-Octen-3-ol, 1-octen-3-ol, , allyl methyl disulfide, allyl methyl tetrasulfide, propenyl propyl trisulfide, , 3-vinyl-1,2-dithi-4-ene, 3-vinyl-1,2-dithi-5-ene, trithiacyclohexene, 2-methyl-2-pentenal, cis-dipropenyl disulfide, trans-dipropenyl disulfide, methyl salicylate, 3,4-dimethyl-2,3-dihydrothiophen-2-one, nonanethiol, diisoamyl disulfide.[15,17,-19,]	Leaves	Essential oil
diallyl disulfide, diallyl tetrasufide, diallyl trisulfide, 1-octen3-ol [15,17]	Flowers	Essential oil
Alliin, β-amyrin, apigenin, apigenin-7-glucoside, apigenin-7-glucuronide scutellarein-7-glucuronide, apigenin-7-glucuronyl glucuronide , apigenin-7-O-methylglucuronide, cyanidin-3-rutinoside, β-sitosterol, β-sitosteryl d-glucoside, luteolin, 7-Omethylscutellarein , ursolic acid [15]	Flowers	Methanol extract
benzaldehyde (54.8%), benzyl thiol (20.3%) dibenzyl disulphide (18.0%). [19]	Inflorescences	Not reported
9-methoxy-α-lapachone, 4-hydroxy-9-methoxy-α-lapachone [15]	Wood (bark)	Dichloromethane phase of the methanol extract
p-coumaric acid, ferulic acid and resveratrol [20] Betulinic acid [21]	Plant	Ethyl acetate extract, Aqueous Infusion
9-methoxy-α-lapachone [22] alliin, allicin, allylsulfoxide, diallyl sulfide, divinyl sulfide, propyl allyl disulfide, stigmasterol [23] alkaloid, ferulic acid, flavonoids, cumarin, p-coumaric acid saponin, resveratrol, sulfur compounds tannin, terpenes, caffeic acid [24,25]	Not reported	Not reported

Conflict of Interest: No conflict of interest

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