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STUDY OF A CONTROVERSIAL UNANI DRUG GAOZABAN- A REVIEW

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ABSTRACT

Gaozaban is one of the most controversial drug in Unani system of medicine. It has been first described by Greek Physician Dioscorides from whom it was adopted by Arabs and subsequently redescribed by Avicenna by its Arabic name Lissanussaur. Litrature survey reveals that several species are used by the name Gaozaban, these are Anchusa strigosa J Labill, Anisomeles malabarica R. Br., Borago officinalis Linn, Onosma hispidum Wall. ex D. Don, Caccinia glauca Savi, Echium emoenum Fish, Heliotropium ophioglossum Stocks, Onosma bracteatum wall, Macrotomia benthami DC R Br, Trichodesma zeylanicum R. Br and Trichodesma indicum R. Br. Plants which are used as Gaozaban, their substitutes, chemical constituents, pharmacological activity, therapeutic actions and uses will be discussed. The paper will be of sufficient interest to justify further investigations on those plants which are not taken up with a view to identify the active principles and correlate the biological activity with the activity mentioned in Unani Text.

KEYWORDS: Gaozaban is one of the most Trichodesma indicum in Unani Text.

INTRODUCTION

Gaozaban is a controversial drug and has long been in use in India in the Unani system of medicine. The crude drug is sold in the bazar in three forms: Leaves (Berg-e-Gaozaban), Flowers (Gul-e-Gaozaban) and the single seeded nutlets (Tukhm-e-Gaozaban). Gaozaban is commonly prescribed for colds, coughs and fevers. According to Unani text[29,25,42] it acts as cardiotonic, brain tonic, refrigerant, demulcent, emollient, laxative, expectorant and lithotriptic and isprescribed for cough, coryza, pneumonia, pleurisy, tuberculosis, asthma, meningitis, melancholia, functional palpitation of heart, jaundice, stomatitis, kidney, urinary

bladder stones and thrust. Besides the crude drug, a lot of compound formulations of gaozaban are sold in the market.

Gaozaban appears to have been first described by Greek physician Dioscorides from whom it was adopted by Arabs and subsequently redescribed by Avicenna 4 (AD 980-1037) by its Arabic name Lissanussaur[35], having the same meaning as the persian name gaozaban i.e. Cow's tongue in allusion to the leaves being covered by tubercles having tapering points and resembling the enlarged papillae on the tongue of a cow. Several species are mentioned by the name gaozaban in the literature, these are: Anchusa strigosa[39] J Labill, Anisomeles malabarica R Br.[39], Borago officinalis Linn[3], Caccinia glauca Savi[39], Echium emoenum Fish[39], Heliotropium ophioglossum Stocks[39], Onosma bracteatum wall[39], Onosma hispidum Wall. ex D. Don[3], Macrotomia benthami DC[39] R Br Trichodesma zeylanicum R. Br[39] and Trichodesma indicum R. Br.[39] Out of these only A. malabarica belongs to family labiatae, where as all others belong to family Boraginaceae.

OBSERVATION

An extensive literature survey reveals that:

1. Plant A. Strigosa[47] which is imported from Iran and sold in the Indian market as the drug gaozaban has a semi purified glycoside which is isolated from the aqueous extract of the flowers by Garg et al.[21] The pharmacological studies with this glycoside showed that it possesses marked hypotensive effect in dogs, cats and rats.

A. strigosa is stimulant, tonic, laxative, antitussive, diuretic, anti hypertensive, demulcent, refrigerant in actions and is used in asthma, kidney and bladder stones, tonic for syphilis, leprosy and rheumatism.[43]

2. Anisomeles malabarica is the only non Boraginaceous species known as gaozaban and was sold at one time in the Bombay bazar.[39] It occurs in southern India, Ceylon, western Ghats from Maharashtra to Karnataka. Anisomelolide, anisomelyl acetate, malabaric acid, 2-acetoxy malabaric acid and anisomelol are isolated as macrocyclic diterpenes, while anisomelic acid, ovatodlolide are as diterpenoid lactones, Betulinic acid and Beta-sitosterol are reported as triterpenoid and steroid respectively.[17,18,22,33,36]

Pharmacological activity of these compounds is not reported. However infusion of its leaves is believed to be efficacious in catarrh, intermittent fevers and its[39] essential oil is used for rheumatism.

3. Plant B. officinalis is found in Europe. Northern Asia[44] and Indian gardens having following chemical constituents:

Amabiline, thesinine, supinine, lycopsamine, intermedine, acetyl-lycopsamine, acetyl-intermedine and choline, these are the pyrrolizidine alkaloids, whereas supinidineviridiflorate, lycopsamine are the unsaturated pyrrolizidines, rutin and dhurrin are the flavonoid and cyanogenic glycosides respectively. Sterols, tocopherols and triterpenoid alcohols are the unsaponifiable matters. The minerals present are Ca, Mg, Na, K, Fe, Zn, Mn, and Cu. Besides these, leucoanthocyanin, choline, sugars, tannins, and rosmarinic, ascorbic, linolenic, oleic, palmitic, amino acids are also reported.[9,15,19,20,30,40]

The therapeutic efficacy of B. officinalis in general, as reported in texts includes diuretic, febrifuge, emollient, demulcent, antispasmodic, diaphoretic, lactagogue, laxative, nervine, pectoral, sudorific, depurative and anti-inflammatory.[2,23,32]

The leaves and/or flowers are used in folk remedies for cancer, corns, sclerosis and tumours. B. officinalisis a folk remedy for bladder stones, bronchitis, cough, cramps, fever, kidney stone, pain, sore throat, swellings and urogenital ailments. Lebanese use the infusion for cold, fever, jaundice and nephrosis. Leaves and flowers in wine are supposed to alleviate boredom, melancholy and sadness. In early herbals, recommended for consumption, fever, itch, jaundice, rheumatism, ringworm and snake bite. Latin Americans take the mucilaginous juice as a sudorificand emollient in eruptive and bilious fever and liver ailments. Flower decoction is used for bronchitis, cold, cough, edema and nephrosis; flower infusion as a sudorific, the leaf and root decoction for diarrhoea and fever; seed powdered in wine, as a lactagogue.[2]

4. C. glauca is another plant which is found in Iran, Afghanistan and Baluchistan.[3]

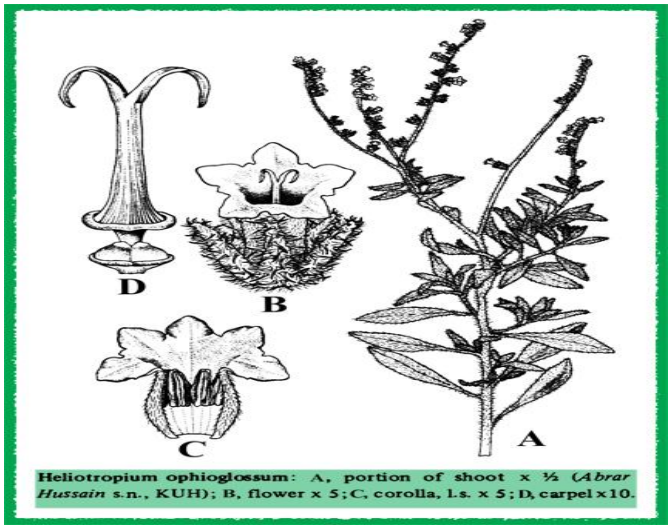
It has various chemical constituents such as Caccinin and rutin are glucoside while caccinetin is reported as aglucon. Caccigennin, caccigenin lactone and 23-deoxycaccigenin are triterpenoidsaponins.[6,8,41]

It has diuretic, demulcent, alternative, antihypertensive, cardiac stimulant, antiurolithiatic and is used in chronic fevers, rheumatism, syphilis, leprosy hypochondriasis, diseases of kidneys, gonorrhoea and dysuria.[27] Pharmacological investigations of the glucoside and aglucon isolated from C. glauca were carried out by Arora et al.[5] The most prominent property of the glucoside its aglucon have a diuretic activity which is exhibited after oral as well as parenteral administration to conscious and anaesthetized rats and dogs. This action is apparently due to an increase in glomerular filtration.

5. E. amoenum is occurring near Capsian shore, Gilan and Azerbaijan.

The crude drug consists of the flowers, chiefly the dried corollas. No phytochemical, pharmacological as well as their medicinal uses are available in the literature.[39]

6. H. ophioglossum is mentioned by Birdwood quoted by Watt is as one of the plant from which the gaozaban of the bazaar is derived.[39]



Heliotropium ophioglossum: A, portion of shoot x ½ (*Abrar Hussain* s.n., KUH); B, flower x 5; C, corolla, l.s. x 5; D, carpel x10.

It occurs in India and China, having local anodyne action. Juice of leaves is used as an application to wounds, sores, boils and to repel pimples on the face, boiled with castor oil it is applied to bites of scorpion, insects and reptiles.

7. M. benthami is the gaozaban of Kashmir, occurs inwestern Himalayas.

According to Steward this plant is used as a medicine for disease of tongue and throat.[24,39]

8. O.bracteatum is another plant which occurs in western Himalayas and Iran. In most works this species is described as the gaozaban of the Indian bazars.[39]

It is alterative, demulcent, diuretic, refrigerant, antihypertensive, cardiotonic, antipyretic, aphrodisiac and spasmolytic in actions and is much prescribed as a tonic for rheumatism, syphilis, leprosy, hypochondriasis and kidney diseases. It also relieves functional palpitation of heart, irritation of stomach and bladder and strangury. It is also used in bronchitis, asthma, throat troubles, ophthalmitis, stomatitis, gingivitis. insanity, gonorrhoea and lumbago. No

phytochemical investigations were carried out on this Plant. However pharmacological studies were carried out with a dealcoholized, detannated extract of O. bracteatum which lowers the blood pressure and depress the heart and causes vasoconstriction. It has direct depressant action on cardiac muscles. It relaxes small intestine and prevents the stimulating action of acetylcholine on the intestine. The drug appears to be useful as spasmolytic.[16,26]

9. O. hispidum is another plant which occurs in western Himalayas. Ursolic acid[1] is triterpanoid which is isolated from dried roots of this plant.

Its roots are applied externally to cutaneous eruptions, the flowers of the plant are used as stimulant and cardiotonic, while leaves are used as alterative.[45] Pharmacologically it has been proved that ursolic acid has anti-tumour and diuretic activity.

10. T. indicum is another plant which is known as gaozaban in Sind and Punjab, this plant is used like Iranian gaozaban.

Three crystalline nonsteroidal compounds from leaves of T. indicum are reported. These are: hexacosane, ethyl hexacosanoate, 21, 24-hexacosadienoicacid.[7,25] It is demulcent, alterative, antipyretic, emollient, depurative, alexipharmic in actions and useful in the removal of phlegmatic humours, skin diseases, fevers and dysentery. Leaves are also employed for making an emollient poultice and the paste of the root is applied for reducing swellings.[39]

11. T. Zeylanicum R. Br is reported to be called gaozaban in Bombay- and is found in peninsular India and South west Bengal.

Supinine[28,37] which is a pyrrolizidineal akoloid was isolated from dried seeds of T. Zeylanicum R. Br, which is the major constituents. A small amount of alkaloid N-oxide occurs in the seeds. The herb is used as food stuff by the tribals in Tanzania. Leaves have emollient, demulcent, diuretic actions and are used in the preparation of emollient poultices. In Philippines, the flowers are used as sudorific and pectoral. The powdered root is applied to the wounds as an analgesic.[46] It is prescribed for cough, leucoderma and piles in Ayurveda.

DISCUSSION

Sitholey[34,38] found that the gaozaban these days sold in the Indian bazars is imported from Iran and consist of leaves and nutlets of A. Strigosa and flowers are E. amoenum. However,

none of the aforesaid species, excepting perhaps M. benthami in Kashmir, appearto be in common use as gaozaban in India today. A. malabarica, T. indicum, T. Zeylanicum, H. ophioglossum and M. Benthamiare obviously substitutes of the Iranian gaozaban and thereuses were probably restricted to the regions in which they occur. O. bracteatum and C. glauca might have one timeconstituted the importedgaozaban, but Sitholey had not come across any evidence in the Indian Bazars.

On comparison of chemical constituents of different plants it is clear that they all are not chemically the same but having different chemical constituents. Pharmacological investigations have been carried out only with regards to A. strigosa, C. glauca and O. bracteatum. Glycoside isolated from A. strigosa and C. glaucaare having antihypertensive and diuretic actions respectivelywhile extract of O. bracteatum lowers the blood pressure, depress the heart and causes vasoconstriction.

As for as the actions and their therapeutic uses are concerned most of the plants are used as a diuretic, cardiotonic, demulcent, refrigerant and as alterative tonic for syphilis, leprosy and rheumatism. All plants are having similarities in their actions and uses up to some extent, but there are no such types of actions or uses which are common to all plants. O. bracteatum and B. officinalis are two plants having almost all actions and uses which are found in different species of gaozaban. No phytochemical as well as pharmacological investigations have been done with M. benthami, E. amoenum and H. Ophioglossum.

CONCLUSION

It is difficult to establish the identity of gaozaban of the ancient Arab and Iranian Physician from description available in the Unani texts. So, on the basis of existing data on the different species of the gaozaban the authors stress the need to carry out preliminary phytochemistry as well as pharmacological investigations of those plants which are not taken up with a view to identify the active principles and correlates the biological activity.

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