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Kabab Chini (*Piper cubeba*) & Its Healing Corollary in Unani Medicine: An Overview

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ABSTRACT

Piper cubeba known as *Kabab Chini* in Unani Medicine, belongs to the family Piperaceae, widely distributed in tropical and subtropical regions and this herb is mentioned in traditional Unani texts as an effective remedy for Renal disorder, Gonorrhoea, Leucorrhoea, Fever, Rheumatism, Diabetes etc. It was found that the qualitative phytochemical study of this plant extract indicates the presence of many essential oils such consisting of monoterpenes: sesquiterpenes, germacene, cubebin, β-pinene etc. It chiefly possesses anti-microbial activity. Piperine is an amide (alkaloid) found naturally in plants belonging to the pyridine group of Piperaceae family, such as *Piper cubeba* and *Piper nigrum* which is widely used in various herbal cough syrups. Unani physicians on the basis of their own experience affirmed that Kabab Chini is one of the best drug for the treatment of *Amra'z-e- Kullia* (Renal diseases) and especially in restoring the normalcy of renal functioins. Ibn-Hubal Baghdadi (1121–1213 AD.) mentioned in his *Kitab Al-Mukhtarat Fit Tibb* about Kabab Chini. "*Gurdon ka tanqiyah karti hai, Jigar ke suddon ko kholti hai, unki pathri aur regh kharij krti hai."* Medicinal plants may serve as a vital source of potentially useful new compounds for the development of effective therapy to combat a variety of kidney problems. Many herbs have been claimed to possess nephroprotective properties but lacks scientific evidence. A concerted attempt has been made to highlight the healing corollary of *Kabab Chini* as mentioned in Unani medicine as to its nephroprotective property in the light of ancient Unani classics and recent scientific studies.

Keywords: Kabab Chini, *Kababah, Piper cubeba,* Nephroprotective, Unani medicine.

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INTRODUCTION

The plant *Piper cubeba* is widely distributed in tropical and subtropical regions and is used medically for various purposes. This climbing woody bush is indigenous to Java, Sumatra and Malay Archipelago; but the dried unripe full-grown fruits of the shrub called Cubeb are obtainable in the Indian market being imported from Singapore, and are also cultivated to a small extent in India, especially in the Mysore state.[1] The genus *Piper* belongs to the family Piperaceae and has over 1000 species distributed in hemispheres, where they grow in the form of erect or scadent (climbing) herbs, shrubs, or less frequently, trees. Throughout the tropics, members of the genus *Piper* are used for many purposes, such as foods and spices, fish bait, fish poison, hallucinogens, insecticides, oils, ornaments, perfumes and for many medicines for dysentery, aromatic stimulant, local irritant, diuretics, carminatives and sedatives. They are also used in rheumatism, gonorrhoea and bronchial troubles. Oil of cubebs, used in lozenges and for flavouring bitters and cigarettes and as a condiment.[2, 3, 4, 5]

Taxonomical Classification:

Kingdom- Plantae; **Division**-Magnoliphyt; **Class**-Magnoliopsida; **Order**-Piprales;

Family-Piperacae; **Genus**-*Piper;* **Species**-*cubeba.*[6]

Vernacular Names:

Arabic- *Hab-ul-Urus,* **Bengali**-Sital Chini, **Canada**-Gandha Menasu, **Chinese**-Biji, **Dutch**-Cubebe, **English**- Tailed Peeper, **Gujrati**-Tadamiri, **Greek**-Mahilyun,Karifiyun, **Hindi**-Kabab Chiniha, **Latin**-Cubebe, **Malyalam**-Valmilaku, **Persian**-Kubaba, **Sanskrit**-Sungad-muricha, **Telugu**- Tokamiriyalu, **Others** name-Falanja.[1,7]

Morphological Description in Unani classics:

Abu Bakar Mohammad Bin Zakaria Al- Razi (865-925 AD.) describe in *Kitab Al-Havi*, that the flavour of *Kababa* is resembles to black peeper i.e. Pungent and bitter with pleasant odour and its properties are alike to *mujeth*/*fuwwah* (*Rubia cordifolia*) and Darchini but Darchini is more *latif* (effective). Ishaque Bin Imran mentioned that it is called as "*Hab-ul-Urus"* and its properties are similar to pepper, it has a tail on its base which is whitish yellow in colour.[7] According to Ibn Haitham *Kababah* is of two types; short and long type. Long type is known as *Hab-ul-Urus* and short type is *Falanja.* Hunain Ibn Ishaque and other translator quoted it as *Bitrique* and the Unani name of *Kababah* as *Qarqisun* and Hunain named it *Kababah*. Galen (Jalinus) mentioned in his book "*Kitab Al Advia Al Moqabalalatu Lil Adva*" that the *Qarqisun* is the thin pieces of wood as Darchini *(Cinnamomum zeylanicum)*, while the *Kababa* found in the form of fruits, however it

may be thin pieces of this fruit.[8] Abu Hanifah mentioned in his book "*Kitab Al-Nabat*," that the tree of *Kabab Chini* resembles the tree of *Aa's* and the leaves are thin as compared to leaves of *Rihan* (*Oscimum sanctum*), flower is whitish yellow which is grown in to hard soil. The fruit is globular or oval shaped and diameter is about 1/6 inch long blackish brown in colour, surface is wrinkled and having tail on its back side, beneath the wrinkled surface hard and brown covering having seeds when fruit is fully riped. It possesses pungent and rather bitter taste with a strong characteristic aromatic odour. The stalked berries are a little big larger than pepper corns, having a furrowed surface. Most of the berries are hollow. They are sold whole and should be crushed or grounded before use. The powder of *Kababah* is reddish brown having characteristic sharp and pleasant odour. Aman Ullah Khan mentioned in his book "*Ganj Ba'd Award*" that the *Kababah* is of three varieties *viz*; *Habashi, Chini and Hindi*. Main difference between them according to their shape or morphology is that the variety of *Kababah* which belongs to China has small fruit as compare to other species, a little longer than the black pepper having a stalk on their head, hollow and light in weight. The fruit of *Kababah Habashi* is bigger and heavier than the Chinese variety. It is filled internally and one of the corners is white and has characteristic pleasant odour while the flavour of both is similar. The assortment which belongs to India is rounded, bigger and heavier than the variety of China, after crushing it gives the characteristic aroma and internally white in colour and it does not have the stalk.[9] Hakim Momin Khan described in his book, "*Tohfat ul Mominin"* (Persian) that the fruit of *Kababah* is just as *Habbe Balsan*. Its aroma is also similar to the same fruit, blackish in colour, the pulp is white and the tree is similar with the tree of *Maurid (Habbul Aa's)* and in India its small variety is found which is known as *Falnja*.[10]

Part used: Dried immature full-grown fruits

Oil-Used in Genitourinary diseases like cystitis, gonorrhoea and gleet.[11]

Chemical Constituents:

The phytochemical outline of *Piper* species is pigeonholed by the production of typical classes of compounds such as amides, benzoic acids, and chromenes, as well as terpenes, phenylpropanoids, lignans, other phenolics and a series of alkaloids.[12 13, 14] The dried *P. cubeba* fruits contain essential oil consisting of monoterpenes: sabinene, β-elemene, α-thujene, carene, 1, 4-cineol and 1, 8-cineol; sesquiterpenes: b-caryophyllene, copaene, α- and β-cubebene, d-cadinene, cubebol and germacene; and some lignans including the dibenzylbutyrolactone lignan i.e. (-) cubebin. Other chemical constituents include allo aromadendrene, α-muurolene, α-phellandrene, α-pinene, α-terpinene, α-terpineol, asarone, β-bisabolene, β-pinene,

bicyclosesquiphellandrene, calamene, cesarone, cubebic acid, cubebinolide, cubenol, epicubenol, g-humulene, g-terpinene, gum, ledol, limonene, linalol, myrcene, nerolidol, ocimene, resinoids, sabinol, and safrole. A lignan profile of *P. cubeba* from Indonesia has revealed 13 lignans found in the fruits, 15 in the leaves and only five lignans in the stalk. The structures of the lignans are very biodiversed comprising of furanofuran lignanscommonly found in the genus *Piper* such as cubebin, hinokinin, yatein, isoyatein, and neolignans with a curious structure such as kadsurin A and piperenone. [15, 16]

Taste: Pungent and bitter

***Mizaj* (Temperament):**

The temperament of this drug according to Ibn-Sina is *Har Yabis* (Hot and dry 2nd Degree) but some other Unani physicians attributed 3rdDegree. [9]

Habitat:

Kabab Chini is origin of Java, Sumatra, Southern Borneo and other island in the Indian Ocean. It is mainly grown in Java and Sumatra, hence some time known as Java Peepers but also from some African countries, cubeb pepper is exported. It is sophisticated in some of the West Indian Islands. Cubeb can be simply grown by planting at the foot of the gloom trees in coffee and nut plantation. The fruit is collected when fully grown but still green and dried in the sun when they become black and wrinkled.[17, 18, 19]

***Miqdar-e- Khorak* (Dosage):**

Safoof (Powder):3-4 gm; *Joshandah* (Decoction): 9.0gm; *Roghan* (Oil): 20 Drops.[20, 21,

Musleh (Corrective):

Sandal Safaid (*Santalum album*), Gulab Khalis (*Rosa damascena*), Mastagi (*Pistacia lentiscus*). [22, 23]

***Badal* (Substitute):** Darchini (*Cinnamomum zeylanicum*), Elaichi (*Elattaria cardaum*), Balchhar (*Valeriana officinalis*), Asaroon (*Asarun europaeum*), Aqarqarha (*Anacyclus pyrethrum*), Peepal (*Ficus religiosa*).[9, 21]

Compound Formulation:

Zawarish Zarooni, Safoofe Shora Murakkab, Luboobe Sageer, Majune Seer Alwi Khani, Sunoone Mujalli, Sufoofe Indrijulab, Zuroore Kattha etc.[20, 24, 25, 26, 27]

Pharmacological actions:

The description of Kabab Chini (*Piper cubeba*) and its pharmacodynamics properties are extensively described in the Unani classics. Some of them are: *Munaqqeye Kulyah wa Masanah* (Cathartic for kidney and bladder), *Mufattitey Suddae Kabid* (Liver deobstruent), *Mudirrate Baul*

(Diuretic), *Mukhrije Sang Gurdah wa Masanah* (Lithotriptic), *Mufattitey Sudad* (Deobstruent), *Mulattif* (Demulcent), *Habis* (Astringent), *Dafa-e-Taaffun* (Antiseptic), *Mutayyibe Dahan* (Mouth Refreshner), *Muqavvi Jigar* (Hepatotonic), *Muharrik* (Stimulant), *Naf-e-Zeeq-un-Nafas* (Antiasthmatic), *Kasir-e-Riyah* (Carminative) and *Muqavvi-e- Medah* (Gastrotonic), *Muhallil* (Anti inflammatory), *Musakkin* (Sedative). [28, 29, 30]

Therapeutic Uses:

Kabab chini is used in the treatment of various ailments since antiquity without any side effects, like- *Amraz-e- Aza'e Tanasul wa Baul* (Genito urinary disease), *Hasate Gurdah wa Masana* (Kidney and Bladder calculi), *Qurooh-e-Majarah Baul* (Urogenital Ulcer), *Qurooh lissa Mutaffnah* (Septic Gingivitis), *Qula-e-Dahan Mutaffina* (Septic Stomatitis) *Yarqaan* (Jaundice), *Qurooh-e- lissah* (Gums Ulcer), *Fasade Medah wa Tehal* (Disoerders of stomach and spleen), *Riyah wa Hasaat* (Gases and calculi), *Waram* (Inflammation), *Khafqaan* (Palpitation), *Sud'a* (Headache), *Quroohe fahm* (Mouth ulcer), *Bauae Dahan* (Halitosis), *Sudda-e-Jigar* (Hepatic obstruction), *Iltehab-e-Masana* (Cystitis), *Suzak* (Gnonorrhoea), *Zaheer* (Dysentery), *Waj'ul Mafasil Barid* (Rheumatism), *Qurooh* (Ulcers), *Taqtir-u -Baul* (Dribbling of urine). [31, 32, 33]

Pharmacological studies:

Antimicrobial activity:

It was found that the extracts of *Piper cubeba has* good antimicrobial activity against the selected bacteria and fungi. The alcoholic extract was found active against all the bacteria and fungi tested. Results, comparable to the standards, the maximum activity was shown by *S.aureus* (11.6mm) *in* methanolic extract and minimum activity was shown by *K. pneumoniae (3.6mm)* when antifungal activity of *Piper cubeba* was performed against two fungi, it was found that activity was appreciable but showed maximum activity against *Aspergillus niger* (7.6mm). [34]

Nephroprotective activity:

When Powder of Kabab Chini was given orally in the form of suspension at the dose of 800 mg/kg and 100mg/kg in pre-treated and post treated rat model against Gentamycin induced nephrotoxicity, serum urea and serum creatinine was significantly decreased. The nephroprotective effect was assessed on the basis of biochemical estimation and the histopathological examination of treated kidney. [35]

Antioxidant activity:

The occurrence of high amount of glycosides, alkaloids, tannins, phenolics and other chief secondary metabolites were detected in ethanolic extract of *Piper cubeba* and *Piper nigrum* which have potent antioxidant activity. The living system is secluded from this by enzymes such

as superoxide dismutase, glutathione peroxidase and catalase and certain endogenous antioxidant such as α–tocopherol, ascorbic acid, β–carotene and uric acid, since the endogenous antioxidants acting as intracellular defensive cells from free radicals damage and extensive lyses. Higher free radical scavenging activity in ethanolic extracts of *Piper cubeba* in comparison to *Piper nigrum* due to presence of phytochemical constituents especially polyphones.[36]

Hepatoprotective activity:

It was found that ethanolic extract of *Piper cubeba* fruits possesses significant antioxidant and hepatoprotective activity. The ethanol extract of *Piper cubeba* attenuated carbon tetra chloride (CCl_4) induced serum marker enzymes and total protein. Histology of liver sections of the animals treated with the extracts showed the presence of normal hepatic cords, absence of necrosis and fatty infiltration which further testifies the hepatoprotective activity.[37] The *Piper cubeba* fruits extract showed the reduction in levels of Serum Glutamic Pyruvate Transaminase (SGPT) and Serum Glutamic Oxaloacetic Transaminase (SGOT), stabilized and repaired plasma membrane and hepatic tissue when damage was induced by CCl_4. [38, 39, 40, 41.]

CONCLUSION:

According to WHO, over 80 % of the world population depends on traditional medicine (Unani Medicine, Ayurveda etc) for their primary health care needs. Exploration of traditional medicine is a mysteriously interesting yet scientifically significant and economically important task of traditionalists and ethno botanists. Demand for medicinal plants is shooting up in both developing and developed countries. Research on medicinal plants is one of the leading areas of research globally. However, there is a need to pay closer attention to the issue of bioactivity-safety evaluation, quality control and conservation of medicinal plants. Renal failure (*suqut-e-kullia*, *huzal-e-kullia*, *zof-e-kullia*) which is sequelae to Diabetes and Hypertension is one of the most emerging disease burden both in India and globally.[42, 43, 44] Medicinal plants may serve as a vital source of potentially useful new compounds for the development of effective therapy to combat a variety of kidney problems. Many herbs have been claimed to possess nephroprotective properties but there is lack of scientific evidence to support these claims. The exploration of present review article testifies that the healing corollary of *Kabab Chini* as mentioned in Unani medicine has established the scientific evidence as to its nephroprotective property. This has opened new vistas for further exploration in checking micro albuminuria which is an initial finding of impending renal disease or arresting the end stage renal disease which is sequelae to Hypertension and Diabetes.

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