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A Comprehensive Review of *Juniperus communis* with Special Reference to Gynecology and Unani Medicine

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Abstract:- *Juniperuscommunis* L. (*Abhal)* is an evergreen aromatic shrub with high therapeutic potential in human diseases . This plant is loaded with nutrition and is rich in aromatic oils and their concentration differ in different parts of the plant (berries, leaves, aerial parts, and root). The fruit berries contain essential oil , invert sugars ,resin , catechin , organic acid, terpenic acids, leucoanthocyanidinbesides bitter compound (Juniperine), flavonoids, tannins, gums, lignins, wax, etc. Conventionally the plant is being potentially used as antidiarrhoeal, anti-inflammatory, astringent, and antiseptic and in the treatment of various abdominal disorders. Recent studies have also found anti-inflammatory, cytotoxic, hypoglycemic and hypolipidemic effects of juniperus berries in experimental replicae. In this review article unani as well as modern concept of juniperus (*abhal*) have been covered.

Keywords*: Juniperus, abhal, lignin,juniperine, wax etc.*

I. INTRODUCTION

Juniperuscommunis L. Is evergreen aromatic shrubs or trees, ornamental plants with branchlets spreading in all directions. Juniper fruits have a gin like aroma and a sweet terebinthinate taste with a somewhat bitter after taste.[1]The medicinal portions of the plant are berries, but they are actually dark blue-black scales from the cones of the tree Unlike other pine cones, the juniper cones are fleshy and soft. Juniper has a history of medicinal use dating as far back as 140 B.C.[2]

II. METHODOLOGY

For present article Unani classical text like *khazainuladvia, kitabulmukhtaratfiltibb, bayazekabeer, makhzanulmufradat, kitabuladvia, Kamil us sana, Al Qanoon fit tib, ilmuladvianafeesi,* were explored for terms like *abhal,habbular'ar, tukhmerehl* etc. for their morphology, types, dosage, substitutes, actions ad characteristics etc.Recent literature available for the comprehensive study were taken from different worldwide accepted scientific database like Science Direct, Indian Journals Index (IJINDEX), Internet Archive, IP Indexing, Scientific Indexing Services, PubMed, Springerlink , Google Scholar, SCOPUS, Crossref, CAS Abstracts, Publons, CiteFactor, Open J-Gate, ROAD, Science Central, RevistasMedicasPortuguesas, EBSCO, NEWJOUR, ResearchGATE, DocStoc, PdfCast, get CITED, SkyDrive, Indian Citation Index (ICI), Index Copernicus, Citebaseetc for botanical description, pharmacological properties and ethnobotanicaluses of different parts of J. communis.

III. SCIENTIFIC CLASSIFICATION

Kingdom: Plantae; **Subkingdom**: Viridiplantae; **Infrakingdom**: Streptophyta; **Superdivision**: Embryophyta; **Division**: Tracheophyta; **Subdivision**: Spermatophytina; **Class**: Pinopsida; **Subclass**: Pinidae; **Order**: Pinales; **Family**: Cupressaceae; **Genus**: Juniperus; **Species**: *Juniperus communis.*[3]

Botanical name: *Juniperus communis*.[4,5,6]
Synonyms : JuniperusArgae, JuniperusBoralis, Juniperus combrassa.[5]
Vernaculars:
Unani : *Bra'ee, Bransi, Abhal*[7]
Arabic : *HabbulAr'ar*
Persian : *Tukhm Rehl*[6]
Hindi : Aaraar[1,8,9,10,11,12] Haubera[1,8,9,11,12]*Abhal*[1, 8,11,12]
English : Common juniper[5,8]
Sanskrit : Hapushaa, Havushaa[8] Vapusha[13]

***Mahiyat* (Unani morphology)**

It is a fruit of a tree, resembles *za'rvar* (azarole). However it is more black and fragrant than azarole. The tree is of two varieties. The leaves of one variety resemble that of *bergsaru'* (cypress), are thorny, flat and not long. The leaves of another variety resemble those of *jha'u*(tamarisk) in shape and taste is like that of cypress. This variety is drier than former but is less hot in temperament.[14, 15]

Parts used: Fruits[4], stem bark, oil obtained from the plant.[1, 8]

Part studied: Fruit

***Mizaj*(Temperament)**: Hot 2^0 Dry 2^0[15,16,17], Hot 3^0 Dry 3^0[6,14,16,18,19]

It is also *lateef*, due to dominance of *jouharnari* and relative presence of *jouhararzisokhta* and *jouhararzibarid.*

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These properties are proved by its bitter and spicy taste.[6,14,16,18]

Af'al* (Actions according to unani literature):Mudir tams*(Emmenagogue),*Mudir bole*(Diuretic)[6,14,16,17],*Muhallilqawi* (Anti inflammatory)[6,7,14,16],*Muharrik*(Stimulant)[6,14,16,17],*Mujaffif*(Desicant)[7,14,16, 17],*Mullattif* (Demulcent),*Jali*(Detergent),*Mufatteh*(Deobstruent),*Muqawimeda*(Stomachic),*Kasireriyah*(Carminative),[14,16,17] *Hazim* (Digestive)[6,14,16,17],Qabiz(Astringent),*Mukhrijkirmamaa*(Anti helminthic)[7,14,16,17]

***Iste'mal* (Uses according to unani literature):**

1. As it possess*lateef* property, it act as diuretic and emmenagogue. It is considered as most potent among other drugs. [18,20,7, 15,16]
2. *Humool* of *abhal*, *murmakki*, *pudina*, *sudabyabis*and *kishmishmusaffa* along with buffalo's gall bladder induces menstruation even if it had been ceased for seven years.[19]
3. It also induces abortion when used in the form of *joshanda,*[20]pessary or as a fumigant.[6,7,15,16,18,21]
4. The fruit of some species of juniper were used by Buqrat in certain diseases of the womb.[22]
5. Nuts of *abhal* roasted in *ghee* are finely powdered and given with *qandsufaid* relieves pain abdomen due to *bawaseer*. [7]
6. Diascorides explains its diuretic properties, its use in cough, pectoral infections and also its digestive properties; a mixture of *safoofabhal* 35 gms, *ghee* 20gms and *shehad* 35gms is very much effective in *ribu.*[6,14,22]
7. The ashes of the bark were also applied locally in some skin affections.[6,14,22]
8. Its application with *sirka* is effective in *da us salab.*[6,7]
9. It is a strong dissolvent, desiccant, irritant and slightly astringent.[14,21]
10. Its powder is useful when sprinkled with honey on corroding, putrid and spreading black ulcers.[7,14,16,18,21]
11. Nuts of *abhal*, when cooked with sesame oil in an iron pan till the nut grows black are used as ear drop, help in deafness as it is *mullattif* and *munzij*.[7,14,16,18]
12. As it is *muqawimeda* and *kasireriyah*, it is useful in *qaraqarshikam* and *amraze meda*.[7,14,16]
13. It is beneficial in *istasqa*,[7,14,16,20]*amraze gurdawamasana* as it is a strong *mudir*.[7,14,16]
14. *Safoof* of *abhal* along with honey is useful in gingivitis and hallutosis.[7]
15. It is purgative[7] and expels out *kirm shikam.*[7,14,]
16. When used as a plaster, it will act as a healing agent because of its *mujaffif* action. [14,21] It is used as *zimad* to relieve *auram*.[7,14,16]
17. It is also useful in *falij*, *isterkha* due to its properties like *muhallil*, *mufatteh*, and *mulattif*.[7,14,16]
18. Paste of *abhal* and *anjeerkhushk* is used to relieve body pains.[7]
19. It is used as a substitute to *darchini*, as it is similar in taste and action.[6,7,14]

***MiqdarKhurak*(Dosage):**3-5 gms[16]
3 ½-10 ½ gms[17]

Muzir* (Adverse effect):Musqitjaneen*[16]

***Musleh* (Correctives)** *: Gilearmani, zarishk, ghee, shehed*[16,17]

Badal* (Substitute): Berge sudab*[16],*darchini,*[17]*saleeqa,*[20, 17]*jouz usaru*[20, 17]

***Murakkabat*(Compound formulations)** *: Majoonmusakkinwajaerehm,Majoonmudir tams, sharbatmudir tams, Joshandamudir tams* [17]

Ethanobotanical description

A dense more or less procumbent shrub, rarely a small tree found in the Himalayas. Bark reddish brown peeling off in papery shreds, leaves in whorls of three, linear-subulate 0.2-0.20 inches long, sharply pointed; flowers usually dioecious, axillary; fruit sub-globose, bluish black when ripe, 0.4-0.5inch in diameter, covered with a waxy bloom; seeds usually three, elongated, ovoid. The plant is very variable with a number of geographical varieties and garden forms. The plants flowers from March to April and the fruit ripens in august to September of the second year. Juniper fruit have a jin-like aroma and a sweet terebinthinate taste with a somewhat bitter aftertaste.[1]

Habitat

The juniper under one or the other of its varieties, has a very extensive distribution, extending throughout Europe and North Africa, Asia Northwards from the Himalayas, Japan, and North America; the dwarf form reaches far into the arctic regions, occurring in the Green land and Kamtschatka. In England it grows in hilly places, and is widely diffused though not very common species; in the south it specially prefers chalk downs, but also occurs on dry sandy heaths.[10,23]

Actions and uses

1. Fruits, foliage and wood are useful.[9,10] Fruits are stomachic,[24]antihalitosicdiaphoretic,[4]stimulant,[4,11,25] carminative,[25] tonic and diuretic; [1,4,8,9,10,11,23,25,26] and are useful in dropsy and renal affections. They are chiefly employed as an adjuvant to other remedies, to increase flow of urine.[9]
2. It is a strongabortificient.[27]
3. The wood yields cedar oil and is used to cure disorders of genitourinary tract.[4] like chronic pyelitis, strangury, prostatic discharges and urogenital irritations.[5,28]
4. Sir James Simpson consider oil of juniper an efficient diuretic when administered through lungs; for this purpose, a teaspoonful of the oil is to be put into a vessel of hot water and the patient is advised to inhale the vapours.[10,23]
5. It cures piles, colic pain, parasitic infestations and obstinate abdominal diseases including diarrhoea[29]and ascitis[5,10,15,23,28]either administered alone or in combination with other diuretics especially digitalis.[10,23]

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6. The berries are also used in cases of aphony, laryngitis and pharyngitis, pulmonary catarrh and asthma.[4] Wood and bark extract are used for short breath and to purify blood.[29]
7. It is used as a remedy for dermatological infections;[1,10,23,28]tar of this species was used externally against scabies and heat rash.[30]
8. The use of essential oils can reduce inflammation, encourage cell regeneration, and eliminate infection.[31]Poultice made from needles and twigs, rich in vitamin C[13]are employed to treat wounds.[4]
9. Berries and oils used in various kinds of tumours.[29]
10. Cones useful for the treatment of diabetes[32] and in nervous disorders.[33]

Traditional medicinal uses

1. *Juniperus*L. (Cupressaceae) species have been used in various inflammatory and infectious diseases such as bronchitis,[10,23,29,30,33,34] cold, cough, fungal infections, haemorrhoids, urinary infections, urticaria, dysentery, haemorrhage, leucorrhoea, [10,23,29,30,34]rheumatic arthritis,[18,33,30,34]gynaecological diseases (to regulate menstruation and to relieve menstrual pain) and in the treatment of gout, angina, cardiac and skin diseases in Turkish folk medicine.[30,34]
2. *Juniperuscommunis* is reported as a traditional cure for tuberculosis and other respiratory diseases.[35]
3. The fruits are traditionally used by Tibetans and a beverage is prepared from these fruits is given in gastric and urinary troubles frequently.[8]Mr. Alexander says that the oil in dose of 4 drops is the most powerful of all diuretics.[18] They have also employed in mucous discharge such as gonorrhoea, gleet.[10,23,29]
4. The essential oil has the peculiar flavour of the berries and possesses their diuretic and stimulating properties to its presence Holland's owes its peculiar flavour.[25]

Chemical constituents

The fruit contains;

Volatile oil	0.8 - 1kg. [1,4,22,26]
Fermentable sugar -	33%. [1, 4, 8,14,22,26]
Resin -	08% [8], 10% [1, 4,14,22,26]
Juniperin (tannin + sugar) -	0.320%

Fixed oil
Proteids
Wax.[1, 4, 22]
Gum.
Pectins.[1, 4]
Organic acids (formic, acetic, oxalic, glycolic).[1, 4, 22]
Ascorbic acid (35mg/100mg), Potassium salts.[1]

IV. PHARMACOLOGICAL STUDIES

Various pharmacological uses of juniper species have been reported so far including antifertility, abortificient, antitumor, diuretic, vaso-relaxing, anti inflammatory antimicrobial, antioxidant, cytotoxic, anti obesity, anthelminthic and immunomodulator.[30]

1. **Reproduction and development:** *Juniperuscommunis* possesses antifertility activity, antidiabetic effect on serum glucose and fructosamine in non obese diabetic micehad antifertility and abortificient effects in rats, but was not teratogenic.[34,35]Juniperuscommunis contains high levels of isocupressic acid (ICA) that has been identified as the abortificient component of ponderosa pine needles in cattle.[34]It induced abortion in pregnant cows when ingested primarily during the last trimester. ICA showed no adverse effects on oocyte maturation and preimplantation embryo development in vitro or subsequent viability in vivo.[3,36]
2. **Anti-Inflammatory and antinociceptive:***Juniperusoxycedrus*subsp. *oxycedrus*and *Juniperuscommunis*var. *saxatilis*possess significant anti-inflammatory and antinociceptive activities. The activity of these plants might at least partially be through PGE2-inhibition.[30]
3. **Antioxidant activity:**Juniper fruit extracts have significant antioxidant activity against various antioxidant systems in vitro; moreover, juniper fruit can be used as an easily accessible source of natural antioxidants and as a possible food supplement or in medicinal and pharmaceutical industries.[34]
4. **Antimicrobial activity:**Fruit extract contains **antiherpetic** agents.[29]The ether extract of J. Communis berries with linseed oil was reported to be effective against **sarcoptesscabii** and psoroptic infected sheep resistant to benzyl benzoate.[8]
5. The **antimycobacterial activity** of Juniperuscommunis was attributed to a sesquiterpene identified as longifolene and two diterpenes, viztotarol and trans-communic acid.[37]
6. **Antifungal activity:**The ether extract of the berries exhibited antifungal activity in vivo and in vitro against trichophytonmentadrophytes in experimentally infected goats and rabbits respectively.[8]
7. **Hepatoprotective activity:** The hepatoprotective activities of the of ethyl acetate fraction [EAF] of *Juniperuscommunis*leaves were investigated against PCM-Paracetamol-induced hepatic damage in Wistar albino rats.[3]
8. **Antihyperlipidemic and antidiabetic effect:***Juniperuscommunis*was evaluated for the antidiabetic and antihyperlipidemic activity on Streptozotocin[STZ]-nicotinamide induced diabetic rats.[3]

9. **Neuroprotective Activity**. Neuroprotective activity of *J.communis*was evaluated in chlorpromazine (CPZ)induced Parkinson's model in rats.[38]
10. **Anti-inflammatory activity:**The anti-inflammatory activity of extracts of juniper plant native todifferent regions of the world has been reported. Depending on the plantmaterial and solvent used for the extraction different researchers havereported the anti-inflammatory potential of the plant ranging fromaverage to very good. Scientific evidence of an anti-inflammatory effectof Juniperus taxa is provided by many in-vitro and in-vivo studies.
11. **Renal effects:** Juniper plant is known as urinary antiseptic and diuretic among other effects in folk medicine. Few studies have also substantiated this claim. Juniper acts as diuretic without loss of electrolytes. The diuretic activity of aqueous infusion of juniper berries is attributed in terpinol-4-ol and to hydrophilic constituents which increase glomerular filtration rate.[39]

V. CONCLUSION

The extensive review of literature revealed that *J. communis*L. is a vital medicinal plant owing to its traditional uses to treat varied diseases and presence of many active chemical constituents which are responsible for diverse medicinal and pharmacological properties.

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