Brinjasif (*Achillea millefolium* Linn): An efficacious unani medicine

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Abstract

Plant based drugs have been in used against various diseases since time immemorial. In India the indigenous system of medicine namely Unani, Ayurveda & Siddha have been in existence for several centuries. This article bridges the gap between the traditional use of brinjasif (*Achillea millefolium* Linn) and the results of evidence based experiments. It is a flowering plant of the family Asteraceae and is widely used in Unani system of medicine as *muhalite warm* (anti-inflammatory) *masakine dard* (analgesic), *dafia‘h huma* (antipyretic), *mudire boul* (diuretic), *mudire haiz* (emmenagogue), *qatl kirme shikam* (antihelmentic). Studies have shown that it possess anti-inflammatory, anti-oxidant, antimicrobial, analgesic, anti-spasmodic, hepatoprotective, gastro-protective activities.

Keywords: brinjasif, *achillea millefolium* linn, unani medicine

1. Introduction

The beneficial uses of medicinal plants in traditional system of medicine of many cultures are extensively documented. Plants have always been a good source of drugs and play a key role in human health care. About 80% of the world population relies on the use of traditional medicine, which is predominantly based on plant material [1]. India is one the most medically diverse country in the world where medicinal plant sector is part of a time honoured tradition that is even respected today. Focus on plant research has increased all over the world and the results have validated the immense potential of medicinal plants used in various traditional systems [2]. The present review highlights the data on *Achillea millefolium* in Unani classical literature, its phytochemistry and research studies. Brinjasif (*Achillea millefolium* Linn), popularly known as “yarrow” belongs to the *Achillea*, the genus widespread all over the world. *Achillea* contains around 130 flowering and perennial species. These plants have hairy and aromatic leaves and flat clusters of small flowers on the top of the stem. The name *Achillea* is referred to the Achilles in the literary Trojan War of the Iliad who used yarrow to treat the soldier’s wounds [3, 4]. Its species have been used by the people as traditional medicine over hundreds of years. Brinjasif (*Achillea millefolium* Linn) has been internally used as herbal teas for headaches, hepato-biliary disorders, gastrointestinal complaints, menstrual irregularities and as appetizer and externally as lotion or ointment against skin inflammation, wounds and abrasions [5, 6]. The medicinal properties of *Achillea millefolium* are worldwide recognized and the plant is included in the national pharmacopoeias of countries such as Germany, Czech Republic, France and Switzerland. In Brazil, *Achillea millefolium* is included in the list of the 16 medicinal plants of the “Verde Saude” (Green Health), a public health phytotherapy agency [7].

2. Methodology

For literature of brinjasif in unani medicine, all available classical text books of unani pharmacology were searched. Literature was also searched on google scholar/PubMed using keywords research studies on *Achillea millefolium*, yarrow, brinjasif. For data generation and analysis, experimental studies, clinical trials and reviews articles were taken into consideration.

2.1. Plant description

2.1.1. Botanical name: *Achillea millefolium* Linn [8, 9, 10, 11].

2.1.2. Synonyms: *Achillea lanulosa* Nutt [12, 13].

2.2.3. Vernaculars

• Unani Tibbi Name: *Artamasia, Artiyamasia* [14, 15].
2.2.4. Morphology
It is an erect, slightly aromatic, pubescent, perennial herb with stoloniferous roots, 15-90 cm in height, leaves are 3-pinnatisect, radial leaves stalked, upper sessile. Flowers in corymbose clusters with white or pale pink in colour [8, 17]. The aerial parts of the herb possess agreeable aromatic odour and bitterish, astringent and pungent taste [17].

3.3. Istamal (therapeutic Uses)
Awrame ahsha (visceral inflammation), warme rehm(pelvic inflammatory disease), salabate rehm(uterine tumors), ehtabase boul (urinary retention), ehtabase haiz (ammenorrhoea), sange gurda wa masana(nephrolithiasis), usre viladat(difficult labour), ikhraj masheema(for expulsion of placenta), humma(fever), [14, 15, 21], darde sar(headache), sadar (dizziness), dawar(vertigo), qurooh(ulcers), kirme shikam (helminthic infestation) [14, 21].

3.4. Miqdar khuraq (dose of administration)
As Powder: 2-7masha (2-7gm)
In decoction: 7-17 masha (7-17gm) [14, 21].

3.5. Muzir (harmful): In kidney disease [14, 21].

3.6. Musleh (corrective): Anisoon (Pimpinella anisum), khashkhash (Papaver somniferum seeds) [14, 21].

3.7. Badal (substitute): Afsanteen (Artemesia absinthium)

2.2.5. Habitat
In India it is commonly distributed in Himalayas from Kashmir to Kumaun at altitude of 1,050-3,600m [8, 9, 17]. Also seen growing in Bombay and Belgaum areas [17].

2.2.5. Part Used: Flowering tops [18].

2.2. Phytochemical constituents
Volatile oil: The main constituents of the volatile oil are: Azulene, chamazulene, prochamazulene, α-pinene, β-pinene, eucalyptol, α-thujone, terpinene, limonene, borneol, terpineol, bornyl acetate, carophyllene, tricyclone, camphene, sabinene, 1,8-cineole, camphor [19].

3. BRINJASIF (Achillea Millefolium) In Classical Unani literature
3.1. Mizaj (Temperament)
Hot° & Dry° [14, 21]
Cold & Moist [22]

3.2. Af’al (pharmacological actions)
Muhallile warm (anti-inflammatory), muskke dard (analgesic), dafae humna (anti-pyretic) [11, 21, 22], musaffie khoon (blood purifier) [21], mudire boul (diuretic), mudire haiz (emmenogogue), Mufattit sange gurda wa masana (urotriptic), qatil kirme shikam, (anti-helminthic), Muvallile warm (blood purifier) [14, 21].

3.3. Brinjasif (Achillea Millefolium)  In vitro studies
4.1. Antioxidant Activity
Candan F et al [23] reported that essential oil of Achillea millefolium exhibited antioxidant activity, in in vitro study, due to synergize effect of its main components i.e. eucalyptol, camphor, borneol, β-pinene and α-terpineol.

4.2. Antimicrobial Activity
Ferda Candan et al [25] in in vitro study on essential oil of Achillea millefolium reported that it exhibited moderate activity against Streptococcus pneumoniae, Clostridium perfringens and Candida albicans, and weak activity against Mycobacterium smegmatis, Acinetobacter lwoffii and Candida krusei because of the presence of eucalyptol (1,8-cineole), borneol and camphor, a well-known antimicrobial agents.

Stojanovic et al [24] in in vitro study on lipophilic extract of aerial parts of Achillea millefolium for its antimicrobial activity against five bacteria (Staphylococcus aureus, Escherichia coli, Klebsiella pneumoniae, Pseudomonas aeruginosa and Salmonella enteritidis) and two fungi (Aspergillus niger and Candida albicans) reported that the extract possessed a broad spectrum of antimicrobial activity against all tested strains.

4.2. Anti inflammatory Activity
Anti-inflammatory effect was reported in in vitro study on methanolic lyophilized extract of powdered aerial parts and fractions enriched in flavonoids and dicaffeoylquinic acids of...
Achillea millefolium L. [24]. Burk et al. [20] in in vitro study concluded that anti-inflammatory effect of aqueous extract of Achillea millefolium L. may be due to synergistic action of plant compounds that act as free radical scavengers and effect the activation of inflammation-related enzymes and production of inflammatory mediators.

4.3. Analgesic Activity
Pires JM et al. [27] in in vivo studies reported significant analgesic effect of extracts of Achillea millefolium L probably due to presence of flavonoid glycoside, rutin and caffeic acid. Nourreddini M. et al. [28] in in vivo study on aqueous extract (AE) of Achillea millefolium L. reported maximum antinociceptive effect at a dose of 160 mg/kg AE. Its activity may be result of its central and peripheral action.

4.4. Vulnerary
Hemmat et al. [29] in his in vivo study reported 100% wound healing, achieved after 14 days of treatment with 5% yarrow extract cream and was more pronounced as compared to 1% phenytoin as a standard healing agent. Active ingredients of yarrow such as achilllein, apigenin, amino and fatty acids may contribute to the healing effects of yarrow extract. Presence of hydrolysable tannins in yarrow extract may cause coagulation of surface proteins and prevention of wound infection and assist the wound for faster healing.

4.5. Gastroprotective Activity
Cristiane HB et al. [30] in vivo studied antulcerogenic activity of the crude aqueous extract of A. millefolium L. and reported that it protect the gastric mucosa against the direct necrosis action of ethanol and stress-induced lesions by reducing the volume and the acidity of secreted gastric juice, suggesting that in the gastric protective action of the extract, there must be a blockage of the mainly receptors presented in the parietal cell (M3, H2 – histamine receptor and CCKb – gastrin receptor) as well as their second messengers. Potrich FB et al. [31] in vivo study reported that hydroalcoholic extract of A. millefolium L. reduced chronic gastric ulcers and promoted significant regeneration of the gastric mucosa probably because of its antioxidant properties.

4.6. Antispasmodic Activity
Moradi MT et al. [32] in in vitro study reported relaxatory effect of A. millefolium on smooth muscles of ileum in rat and suggested that the effect can be due to the blockade of voltage dependent calcium channels. Mehdi B et al. [33] in in vitro study demonstrated that hydroalcoholic extract of A. millefolium inhibited electrical induced contractions of guinea pig ileum. The effect was dose dependant and probably due to its interaction with acetylcholine activity.

4.7. Oestrogenic Activity
G. Innocenti et al. [34] in in vitro study reported that crude extract and isolated compounds of the aerial parts of A. millefolium induced a positive estrogenic effect. The crude extract was more active than the fractions, suggesting a synergic effect. Apigenin and luteolin, the most important estrogenic compounds among tested compounds. Both receptors, α and β estrogen (ERα, ERβ) receptors were activated by apigenin. Luteolin seems to have a very slight effect on β and does not seem to activate β at all.

4.8. Anti fertility Activity
Nasrin T et al. [35] studied the effects of A. millefolium L. extract on spermatogenesis in adult male wistar rats. At the dose of 800 mg/kg, intra peritoneal injection, thickened seminiferous tubules on basal membrane, decrease in cell accumulation in seminiferous tubule, severe disarrangement, degenerative cells and severe decrease in sperm count were seen. At the dose of 800 mg/kg/day, orally, basal membrane was thickened and the disarrangement in cells was demonstrated.

4.9. Anti diabetic activity
Yalda et al. in vivo [36] studied effect of Achillea millefolium L. on interleukin-1β (IL-1β) and inducible nitric oxide synthase (iNOS) gene expression of pancreatic tissue in diabetic rats and reported higher insulin level associated with lower glucose level and higher body weight compared to control diabetic group. It seems that beneficial effect of Achillea millefolium L. on diabetes is due to amelioration of IL-1β and iNOS gene over expression and its antioxidant activity which can have a β-cell protective effect. Khalid et al. in vivo study evaluated hypoglycaemic and hypolipidemic effect of extract of Achillea millefolium in alloxan induced diabetic rats and reported that the extracts at dose levels of 250 and 500 mg·kg⁻¹ body weight showed significant (P ≤ 0.05) decrease in blood glucose level, TGL, VLDL, cholesterol, SGOT, SGPT, and ALP in diabetic rats. The extracts due to its antioxidant property prevented the β-cells of pancreas from the cytotoxic effects of Alloxan monohydrate.

4.10. Hepatoprotective Effect
Ruqaya M et al. [38] in vivo studied hepatoprotective effect of methanolic extract of Achillea millefolium on carbon tetrachloride induced hepatotoxicity in rats and reported significant decrease in liver enzymes and regeneration of hepatic cells probably due to presence of flavonoids in it. Yaeesh S et al. [39] in vivo study reported that pre treatment of mice with crude extract of Achillea millefolium significantly prevented the toxin induced rise in plasma AST and ALT and the effect was further verified by histopathology of the liver, which showed improved architecture, absence of parenchymal congestion and apoptotic cells, compared with toxin group animals.

4.11. Neuroprotective Effect
Vazirirnejad R et al. [40] in vivo study demonstrated that treatment with aqueous extract of Achillea millefolium attenuate disease severity, inflammatory response and demyelinating lesions in experimental autoimmune encephalomyelitis because of its anti-inflammatory and antioxidant properties.

4.12. Anxiolytic Effect
Baretta IP et al. [41] in vivo study demonstrated that oral administration of hydroalcoholic extract of Achillea millefolium L in mice exerted anxiolytic like effects and did not present tolerance after short-term, repeated doses.

5. Conclusion
A. millefolium is a herb of enormous therapeutic effects and has been used for various ailments especially visceral inflammation, wound healing, analgesia. Some of its traditional usages have been scientifically validated. A number of compounds have been isolated from the plant
especially phenolics, flavonoids, sesquiterpenes, tannins, camphor, eucalyptol, terpinene which are responsible for its pharmacological activities. Further, clinical research appears worthwhile to explore the therapeutic potential of this drug.

6. References


