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PHYTOCHEMICAL AND PHARMACOLOGICAL REVIEW OF SIBR (ALOE BARBADENSIS)

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ABSTRACT

Sibr, Aloe barbadensis is a medicinal plant which has been used for thousands of years in Unani system of medicine. The health benefits of aloe vera are well known and accepted to scholars and researchers today. The genus *Aloe* has more than 400 species but few, such as *A. vera*, *Aloe ferox*, and *Aloe arborescens* are globally used for trade. Therapeutic uses are in diseases of head, ear, nose and throat, conjunctivitis, ulcers, tonsillitis, gastro-intestinal tract diseases, piles, skin diseases, malignant ulcers etc., in this system of medicine since centuries. The present review summarizes the pharmacological actions, therapeutic benefits and phytochemical constituents in light of pre-clinical and clinical studies done on aloe vera.

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INTRODUCTION

The name Aloe vera is derived from the Arabic word “Alloeh” meaning “shining bitter substance,” while “vera” in Latin means “true”. The Greek scientist, two thousand years ago, regarded Aloe vera as the universal panacea. The Egyptians called Aloe “the plant of immortality” [1,2]. This plant has been known by a number of names such as ‘the wand of heaven’, ‘heaven’s blessing’ and ‘the silent healer’. It is a natural product that now a days, is used very much in cosmetic industry [3]. The genus Aloe contains over 400 different species with *Aloe barbadensis*. Miller, is considered to be the most biologically active [2]. *Aloe vera* belongs to the family Liliaceae, and it is widely used in the manufacturing of food and drink products, pharmaceuticals, and cosmetics [4].

Aloe vera gel has various pharmacological actions like antibacterial [5,6,7,8,9], antiviral [5,6,8,9], antiseptic [5,6] wound healing [5,6,8], antifungal [5,6,7,8] anti-inflammatory [5,6,7,8,10,4], antioxidant [5,6,9,4], antiarthritic, hypoglycaemic properties [7], immunomodulatory effect [9,10] antidiabetic effect [9], hepatoprotective effect [9], anticancerous [9], antihyperlipidemic activity [9], effect on estrogen [9], antitumor [4], antiulcer activity [9] and many other characteristics that have prompted an increase in industrial and commercial production globally [6]. Therefore it was used as nutritional drinks, moisturizer, healing agent in cosmetics, diabetic patients, sun burn, wounds and digestive tract disorders, with no adverse effect noted [11]. Traditionally, *Aloe vera* was used for treating various human illnesses including hypertension, gastrointestinal ailments, musculoskeletal ailments, diabetes, asthma, epilepsy, burns, wound healing and frostbite [100, 101]. *A. vera* was used as a panaceum, or cure-all in many cultures, especially in India. The plant is used for cosmetic, medicinal, and nutritional purposes; special thanks to its antioxidant property [12]. Aloe vera had applications in health and cosmetic products for many centuries, as well as anti-tumor, antioxidant, anti-inflammatory and laxative properties [13].

It is a source of 19 out of 20 essential amino acids which are required by our body and these amino acids help in smooth functioning of our complex enzyme system. The next most useful benefit of aloe vera is its source of vitamins, which includes A, B C, E and folic acid [6]. As this plant grows in soil rich in minerals, it becomes a rich source of calcium, sodium, potassium, magnesium, iron, copper and zinc [14].

Mutraddifaat (Vernacular names)

Arabic:	Sibr [15,16] Sola, Sabara [17] Musabbar [18,19]
Persian:	Sibr [15,16,18], Zarda, Shabeyaar [17,19]
Unani:	Gheekwaar, Sibr [20], Faiqra, ilya [17,21]
Ayurvedic:	Kanyaasaara, Eleyaka (dried juice of the leaves), Kumaari, Kumaarika, Kanyaa, Grihkanyaa, Ghritkumaarika [20]
Siddha/Tamil:	Sotru Kattrazhai, Kumaari, Moosaambaram (dried juice) [20]
English:	Aloes, Indian Aloe, Curacao Aloe, Barbados Aloe, Jaffarabad Aloe [20,16]
Hindi:	Elva, Kala Baul, Musabhar [17,21,16] Ghikanvar, Kumari [15]
Urdu:	Musabbar, Ailva, sibr, Ghikwar [15,18]

Scientific name

Aloe Barbadensis, [16] *Aloe vera* Tourn. Ex Linn; *Aloe indica*, *A. littoral* is Koenig [15]

Azjae- mustamela (Part used)

Expressed and dried juice of leaves and pulp [22]

Mizaj (Temperament)

Hot²& Dry² [16]

Hot¹& Dry³ (Jalenoos) [17]

Miqdar-e-Khurak (Therapeutic dosage)

1-4gm [15,18]

7-10.5gm, 1.75or 3.5-7gm, [17]

Mode of administration

1. *Dakhili Iste'maal* (Oral use) [16]
2. *Farzaja* (Suppository) [16]
3. *Tila* (Liniment) [16,17]
4. *Zimaad* (Medicated paste applied externally) [16]
5. *Latookh* (Medicine smeared on cloth for local application)
6. *Zaroor* (Sprinkle) [16,17]

Af'aal wa khawas (Therapeutic actions)**External**

1. *Qabiz* (Astringent) [23,24,17]
2. *Mujaffif* (Desiccant) [23,24,17]
3. *Muhafiza badan* (Protective of body) [23,24,17]

Internal

1. *Mundamil-e-qoroooh* (Cicatrizant/ Healing agent) [23,24,17,18]
2. *Munnaqi-e-qoroooh* (Wound cleaner) [16]
3. *Musakkin* (Sedative) [17]
4. *Jali* (Detergent) [17]
5. *Mushil-e-meda* (Purgative of stomach) [24,18]
6. *Mushil-e-sar* (Purgative of head) [17,18]
7. *Mushil-e-mafasil* (Purgative of joints) [17]
8. *Mushil-e-batn* (Purgative of abdomen) [17]
9. *Jaazib* (Absorbent) [17]
10. *Munaqqie-wasakh Me'dah* (Gastric wax cleanser) [23,18]
11. *Munaqqie-wa sakh urooqh* (Vessel wax cleanser) [17,18]
12. *Munaqqi badan* (Body Cleanser) [17]
13. *Mushil-e-Sauda* (Melanagogue) [17,18]
14. *Mushil-e-Safra/Mukhrij-e-Safra* (Cholagogue) [17,18]
15. *Mushil-e-Balgham* (Phlegmagogue) [17,18]
16. *Muntariq* (Healing agent of deep wounds) [17]
17. *Munbit-e-lahm* (Healing agent) [17]
18. *Haabis-e-Dam* (Haemostyptic)
19. *Musawwid-e-Sha'r* (Hair blackener) [17]
20. *Mutawwil-e-Sha'r* (Hair elongator) [17]
21. *Muja'id-e-Sha'ar* (Hair curler) [17]
22. *Muqawwi-e-Sha'r* (Hair tonic) [17]
23. *Munbit-e-Sha'r* (Hair growing agent)
24. *Mohallil-e-Waram* (Anti-inflammatory) [17]
25. *Musakkin-e-Alam/ Dafi'-e-Alam* (Analgesic) [17]
26. *Munawwim* (Hypnotic/Soporific) [24,17]
27. *Munaqqi-e-Dimagh* (Brain purgative) [17]
28. *Musakhkhin* (Heat producing/calorific) [17]
29. *Mujaffife rtoobat-e-dimagh* (Desiccant of brain) [17]
30. *Muqawwi-e asaab basar* (Eye tonic) [17]
31. *Munaqqi-e-asaab basar* (Eyes stimulant) [17]
32. *Muhallil-e- reyah* (Resolvent of gas) [17]
33. *Munaqqi-e-sufl* (Sediment cleanser) [17]
34. *Qaatil/Muhlik kirm-e-shikam* (Intestinal vermicide, Anthelmintic) [17,16,18]
35. *Mukhrij kirm-e-shikam* (Expulsive for Intestinal worm) [17]
36. *Mufatteh Sudad* (Deobstruent) [17]
37. *Mufatteh Sudad jigar* (Deobstruent of liver) [17]
38. *Mufatteh Sudad urooqe-maasaareeqa* (Deobstruent of mesenteric vein) [17]
39. *Mudirre-Haiz* (Emmenagogue) [16]
40. *Muqawwie Meda* (stomachic) [16]
41. *Muqawwie Kabid* (liver tonic) [16]

Mawaqe-e- Istemal (Therapeutic uses)**Diseases of head:**

Suda' (Headache), *Maali Kholia* (Melancholia), *Siql-al-Raas* (Heaviness of head), *Takhayyul*, *Nazlah* (Coryza) [17]

Diseases of hair:

Intisaar-al-Sha'r (Falling of hair), *Sala* (baldness), *Hazaz* (Dandruff) *Sa'fah* (Favus / Prurigo), *Da'al-Tha'lab* (Alopecia areata) *Da'al-hayya*, *Qoobaa* (Ring worm) [15,17]

Diseases of eye:

Warm-e-'Ayn (Swelling of eye), *Quruhal-'Ayn* (Ulcer of eye), *Ramad/Aashob-e-Chashm* (Conjunctivitis), [24] *Surkh Baada/Humrah* (Erysipelas) *Jarab-wa-Hikka* (Scabies, Itch) *Namla* (Herpes), *Shara* (Urticaria), *Quruh* (All types of ulcers), *Hikka-e- Aian* (Itching of the eye), *Jarabal-'Ayn* (Trachoma) [17]

Diseases of eyes, nose and throat:

Warm-e-uzn (Swelling of ear), *Utaas* (Sneezing) [24] *Quruh al-uzn* (Ulcer of ear), *Quruh al-fam* (Mouth ulcers), *Waram al-Lawzatayn* (Tonsillitis), *Waram al-Litha* (Gingivitis) [17]

Gastro-intestinal diseases:

Zo'f-e-Meda (Weakness of Stomach) *Imtila-e-Meda* [24] *Qurooh-e-Medah* (Gastric ulcer), *Quruh al-Maq'ad* (Anal ulcers), *Nawasir* (Anal Fistula), *Shiqaaq -e- Maq'ad* (Anal Fissure), *Bawaseer* (Piles) ([17]

Sexual diseases:

Quruh al-zakar (Penis ulcer), *Qurooh-e- Majraa-e- Qazeeb* (Urethral Ulcer), *Qurooh-e- farj* (Vaginal Ulcer), *Qurooh-e- azae- Usbani* [17]

Skin diseases:

Surkh Baada/ Humrah (Erysipelas), *Jarab-wa-Hikka* (Scabies, Itch), *Namla* (herpes), *Shara* (Urticaria), *Quruh* (All types of ulcers) *Aakilah /Gosht Khorah* (Cancrum), *Qurooh-e-Khabeesah* (Malignant Ulcers), *Jamrah* (Anthrax), *Razz* (Contusion), *Faskh* (Cutting of a part), *Uqda* (Hard nodules) [17]

Muzir Asraat (Adverse effect)

Sahj-e- Meda, *Ama'a wa kabit* (Injury of the stomach, intestine, liver), *Mufatteh Urooq-e-Damviyah* (Blood vessel dilator), *Ishaal-e-Damvi* (Dysenteric diarrhoea/Haemorrhagic diarrhoea),[25,17] *Bawaseer* (haemorrhoid).[16]

Musleh (Corrective)

Kateera (*Astragalu sgummifer*), *Gul-e-Surkh* (*Rosa damascene* Mill.),[16] *Mastagi* (*Pistacia lentiscus* Linn), *Muqil* (*Commiphora mukul*).[25,17,18]

Badal (Substitute)

Rasaut (*Berberis aristata*), *Afsanteen* (*Artemisia absinthium*) [25,17] *Turbud* (*Operculina turpethum*) [16]

Murakkabat (Formulations) in unani medicine

Habb-e Tinkaar, *Habb-e-Shabe-yaar*, *Habb-e-Sibr*, *Habb-e- Ayarij*,[16] *Zimad-e-Jalinoos*, *Majoon-e-Antaki*, *Kohal-e-Bayaz*, *Habb-e-Muntin Akbar*, *Habb-e-Mudirr*, *Habb-e-Ghafis*, *Iyarji-e-Loghaziya*. [15]

Chemical composition of A. vera leaf pulp and exudate:**Anthraquinones/anthrones:**

Aloe-emodin, aloetic-acid, anthranol, aloin A and B (or collectively known as barbaloin), isobarbaloin, emodin and ester of cinnamic acid [5,26,27]

Carbohydrates:

Pure mannan, acetylated mannan, acetylated glucomannan, glucogalactomannan, galactan, galactogalacturan, arabinogalactan, galactoglucoarabinomannan, pectic substance, xylan, cellulose [5]

Chromones:

8-C-glucosyl-(2'-O-cinnamoyl)-7-O-methylaloediol A, 8-C-glucosyl-(S)-aloesol, 8-C-glucosyl-7-O-methyl-(S)-aloesol, 8-C-glucosyl-7-O-methylaloediol, 8-C [27] glucosyl-noreugenin, isoaloeresin D, isorabaichromone, neoaloesin A [28,26]

Enzymes:

Alkaline phosphatase, amylase, carboxypeptidase, catalase, cyclooxygenase, cyclooxygenase, lipase, oxidase, phosphoenolpyruvate carboxylase, superoxide dismutase [28]

Inorganic compounds:

Calcium, chlorine, chromium, copper, iron, magnesium, manganese, potassium, phosphorous, sodium, zinc [3]

Miscellaneous including organic compounds and lipids:

Arachidonic acid, γ -linolenic acid, steroids (campesterol, cholesterol, β - sitosterol), triglycerides, triterpenoid, gibberillin, lignins, potassium sorbate, salicylic acid, uric acid. [5]

Non-essential and essential amino acids:

Alanine, arginine, aspartic acid, glutamic acid, glycine, histidine, hydroxyproline, isoleucine, leucine, lysine, methionine, phenylalanine, proline, threonine, tyrosine, valine [5]

Proteins:

Lectins, lectin-like substance [5]

Saccharides:

Cellulose, Glucose, Mannose, L-rhamnose, Aldopentose, Acemannan [8]

Vitamins:

B1, B2, B6, C, β -carotene, choline, folic acid, α -tocopherol [28,8]

CONCLUSION

Aloe vera, the miracle herb has proven itself in being beneficial in many health functions besides its decorative uses. Unani system of medicine has described this plant centuries ago. It is found in many consumer products including beverages, cosmetics and medications today. Its traditional uses, as mentioned in classical Unani texts should be explored in light of scientific evidences to meet the need of modern pharmacology. Further researches are needed to make this unani drug patent.

Conflict of interest

Nil

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