ABSTRACT

Objective: Bazar-ul-Banj syn. Ajwain khurasani (Hyoscyamus niger Linn.) is one of the important drug mentioned in Unani literature. It mentioned by the great Unani philosopher Dioscorides (first century AD) in his treatise Kitab-al-Hashash. According to Unani philosophy, Bazar-ul-Banj is in third-degree category according to its temperamental nature. H. niger Linn. contains tropane alkaloids in good quantity, mainly hyoscyamine and scopolamine.

Methods: Unani classical literature was searched from recent to past available in different libraries. For phytochemistry, pharmacology, and clinical studies to prove, the importance computerized databases such as Medline, PubMed, Ovid SP, Google Scholar, and Science-direct were searched. All the information of plant available in Urdu, Persian, Arabic, and studies published abstract were included in the study.

Results: Fourteen Unani books were referred and 18 pharmacological studies were recognized. The action of Bazar-ul-Banj mentioned in Unani classical literature are Hazim (Digestive), Mudamamil (Cicatrizing), Majajiff (Dessicant), Mukhaddir (Anesthetic), Munashshi (Narcotic), Munawwim (Hypnotic), Musakkin (Sedative), Musakkin-e-Alam (Analgiesic), Raade (Dewvative), Qubiz (Astringent), etc., and useful in Amraz-e-asbania (nervous affections), Amrza-e-Raham (uterine spasm and pain), Dard wa Alam (pain), Ikhtelaj-e-Qalb (palpitation), Junoon (mania), Niqras (Gout), Zeegun Nafas (Bronchial asthma), etc. H. niger Linn. showed many pharmacological effects included antimicrobial, anticancer, analgesic, anti-inflammatory, antipyretic, antihypertensive, and anti diarrheal activities in different clinical and experimental studies.

Conclusion: This presentation is an attempt to showcase the action, uses mentioned in Unani literature, chemical constituent, and pharmacological and toxicological effects at one place. It may also observe that the drug is having many actions which may be beneficial in cases of COVID-19. It may be concluded this should be tested as adjuvant medicine in cases of COVID-19.

Keywords: Ajwain khurasani, Bazar-ul-Banj, Hyoscyamus niger Linn., Unani medicine.
Temperament
The USM describes the general character of a drug in terms of its temperament. According to Unani philosophy, drugs are classified as per the specific temperament (Mizāj) and are graded in the first, second, third, and fourth-degree according to their potency. According to this philosophy of Unani system, Bazr-ul-Banj is cold and dry in the third degree of temperament [28-35].

Part used
As per Unani classical literature, seeds and leaves are used for various therapeutic purposes.

ACTION MENTIONED IN UNANI LITERATURE

| Action | Part used |
|--------|-----------|
| Habis (Retentive) | Bazrul Banj (Hyoscyamus niger Linn) |
| Habis (Digestive) | Habis (Digestive) |
| Muhaddir (Anesthetic) | Muhaddir (Anesthetic) |
| Munaawwim (Hypnotic) | Musakkin (Sedative) |
| Musakkin (Sedative) | Qabiz (Astringent) |
| Raade (Divertive) | Musakkin-e-Alam (Analogic) |

Potent action
The potent action of this plant is Musakkin (sedative) [29,35].

Hyoscyamus niger Linn

Uses
It is useful in Amraz-e-asbania (nervous affections) [28,29,31,32]; Amraz-e-Raham (Uterine spasm and pain) [28,31,32,37,40]; Ashi dard (neuralgia) [28,31,32]; Bars (Vitiligo) [40]; Bowaseer (hemorrhoids) [31]; Dard wa Alam (pain) [28,31,35,37,39]; Epiphora [28,31,32,34,37,41]; Fuvuq (Hiccup) [27,31,32]; Itthelaj-e-Qab (palpitation) [28,31,32]; Itthilhab/warm (inflammation) [28,31,32,34,37,39]; Irqan Nisa (sciatica) [31,37,39,41]; Jirayan-ud-dam (hemorrhage) [31,35,38,41]; Junoon (mania) [31,35,41]; Kharish (Pruritis) [31]; Malikholia (Mélancholia) [31]; Nafs-ud-dam (hypothesis) [28,31,32,37,39,41]; Nazia (Cataract) [28,31,41]; Niqras (Gout) [31,35,37,39,41]; Niyani e Muzmin (Ch. Dementia) [28,31,32,41]; Quololian (Colic) [31]; Qurooh-e-Raham (uterine ulcers) [31]; Sahr (insomnia) [31,41]; Sullan-ur-reham (leucorrhoea) [28,31,32,34,37,39]; Shahiqa (whooping cough) [28,31,41]; Suda (Cephalgia) [28,31-34,37,39]; Waja-ul-Asnan (Toothache) [28,31,32,34,35,37,39,41]; Waja-ul-Mufasil (polio arthritis) [31,35,37,39,41]; Waja-ul-Medai (gastralgia) [31]; Waja-ul-Uzn (otalgia) [28,31,32,34,35,37,39,41]; Warm-e-Khussaytein (Orchitis) [28,31,37]; Warm-e-Hanjarah (Laryngitis) [28,31,37]; Warm-e-Pistan (Mastitis) [28,31,37]; and Zeqeen Nafas (Bronchial asthma) [28,29,31,35].

Ethnopharmacological action
In ethnobotanical books, the action of the plants is mentioned as: Anti-inflammatory [19,42]; antispasmodic [42,43]; intoxicating [19,43]; anesthetic [16]; narcotic [18,43,44]; hypnotic [18,43,44]; sedative [18,43,44]; analgesic [18,42-45]; mydriatic [42-46]; and astringent [42-44].

Ethnomedicinal uses
This plant may be used in various diseases that are nervous disorders [18,44]; uterine spasm [18,19,42,44]; uterine pain [18,19,42,44]; neuralgical [19,43-45]; epiphora [19,43,44]; hiccup [19,43]; functional palpitation [19,43]; inflammation [19,43,44]; mania [19,43]; locomotor alexia [18,44]; melancholia [19,43]; maniacal excitement [19,43,46]; hemoptyasis [44]; catarrah [42-45]; chronic dementia [19,43]; insomnia [19,43]; leucorrhoea [19,43,44]; whooping cough [42-45]; cephalgia [19,43,44]; toothache [19,43,44]; otalgia [19,42,44]; orchitis [19,42-44]; laryngitis [43]; mastitis [19,42-44]; and asthma [19,42-45].

Dose
In Unani classical text, the dose of Bazr-ul-Banj is mentioned 500–750 mg [31,35,41].

Substitute
In Unani classics, it is also referred that in case of non-availability of the drug substitute may be used. It is stated that Afyun (Papaver somniferum); Balchur (Nardostachyas jatamansi); Lajah (Atropa belladonna); and Tukhme-Karafs (Apium graveolens) [31,32] may be used.

Corrective
To counter any adverse effect of drug, some corrective measure may be adopted. For this Shahad (Honey) [35] Gee (Clarified butter), Doodh (Milk), Khaskhash (P. somniferum), Anisoone (Pimpinella anisum), and Milk of sheep [30,31] may be used along with the drug to avoid any adverse reaction.

Chemical constituents
H. niger seeds were reported to contain alkaloid (hyoscyamine, hyoscine, scopoline, atropine, etc.) [22,47,48], volatile oil, glycoside, mucilage, albumin, steroid glycosides (atroposide A, atroposide C, atroposide E, and petunia side L), phenolics (vanillic acid, vanillin, pinoresinol, and N trans-feruloyl tyramine), and phytosterols (daucosterol and beta-sitosterol), etc. [49,50].

Insecticidal effect

Chemical constituents

Anticancer activity

Antibacterial

Activity Anticonvulsant

Antidiabetic

Antihypertensive

Antispasmodic

Antibacterial

Activity Antispasmodic

Anticancer activity

Antioxidant activity

Anti-inflammatory activity

Antihypertensive

Antidiabetic

Antispasmodic

Antibacterial

Activity Anticonvulsant

Antidiabetic

Antihypertensive

Antispasmodic

Antibacterial

Activity Anticonvulsant

Antidiabetic

Antihypertensive

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Activity Anticonvulsant

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Antihypertensive

Antispasmodic

Analgesic activity
The methanolic extract of seeds of H. niger and leaves of H. albus showed analgesic activity in experimental animal models at different doses in hot plate reaction time and writhing response [51-53]. Hydroalcoholic extract of seeds decreased the formalin-induced acute and chronic pain significantly through parenteral and oral route relative to the control group [54,55]. Methanolic extract of H. reticulatus L. possesses a significant antinociceptive activity in both central and peripheral pain models in mice [56]. The crude extract of H. niger reduced the numbers of acetic medium-induced writhes in mice in dose-dependent manner [57].

Antibacterial activity
Alkaloidal extract showed antibacterial activity against microorganisms: Pseudomonas stutzeri, Staphylococcus aureus, Escherichia coli, and Klebsiella pneumonia [58].

Anticancer activity
Alkaloidal extract of H. niger showed anticancer activity by reducing the spontaneous frequency of chromosomal aberrations, micronuclei assay, and increased the mitotic index in mice bone marrow cells. Alkaloidal extract also induced apoptosis activity rather than cytotoxic activity against cancer cell lines [A549, PC-3] [27]. Compounds gossamamide, and cannabinoids D, and G isolated from H. niger seeds exhibited moderate cytotoxicity in cultured LNCaP human prostate cancer cells [59].

Anticonvulsant activity
Methanolic extract of H. niger L. possess the anticonvulsant activity against picrotixin-induced seizures in mice by increasing latency and duration of seizure also delayed the death as compared to control [60]. Alcoholic seed extract of H. niger has markedly alleviated pentyletetrazol-induced seizure phases in male mice [61].

Antidepressant effect
H. niger leaves ethanol extract significantly reduced immobility duration of mice in forced swim test and tail suspension test in higher dose; it also showed anxiolytic activity [62].

Antidiabetic activity
Calystegines, polyhydroxylated alkaloids extracted from H. albus seeds showed antidiabetic effect on streptozotocin-induced diabetes in mice by markedly reducing blood glucose levels and minimized damages on β-cells of islets of Langerhans, also stimulated β-cells regeneration, and improved insulin secretion [63]. The oral administration of methanolic extract of leaves of H. albus significantly reduced the levels of blood glucose and glycosylated hemoglobin in streptozotocin-induced diabetic rats [64].

Antidiarrheal activity
The crude extract of H. niger seeds exhibited antidiarrheal and antisecretory effects against castor oil-induced diarrhea and intestinal fluid accumulation in mice [65].

Antihypertensive
H. niger crude extract lowers blood pressure through a Ca(++)-antagonist mechanism in dose-dependent manner in rats and guinea pig models, also exhibited a cardio depressant effect on the rate and force of spontaneous atrial contractions [66].

Antihyperuricemic activity
Aqueous extract showed an inhibitory effect on xanthine oxidase activity, oral administration of the aqueous extract significantly reduced serum urate levels in hyperuricemia induced in mice in a dose-dependent manner [67,68].

Anti-inflammatory activity
The methanolic extract of seeds of H. niger showed an anti-inflammatory effect in carragenin-induced paw edema and cotton pellet granuloma methods [51].

Antimicrobial activity
The butanolic extract of H. albus possessed antibacterial effects against S. aureus, E. coli, P. stutzeri, Pseudomonas aeruginosa, Proteus mirabilis, and K. pneumonia [58,69,70]. The methanol extracts of the seeds of H. niger showed antimicrobial effect against urinary tract pathogens (Enterococcus faecalis, E. coli, K. pneumoniae, P. aeruginosa, P. mirabilis, and Candida albicans) [71-73].

Antioxidant activity
Aqueous methanol extract significantly inhibited monoamine oxidase activity and attenuated 1-methyl-4-phenyl pyridinium (MPP+)-induced hydroxyl radical (·OH) generation in isolated mitochondria [67,69,70,74]. Methanolic extracts of H. albus exhibited maximum 2, 2-diphenyl-1-picrylhydrazyl (DPPH) antiradical, nitric oxide scavenging, and metal chelating activities [75] compared to α-tocopherol [67,76]. Aerial parts of H. niger extract exhibit DPPH and ferric, reducing antioxidant scavenging properties [77]. Hexane and water extracts of H. reticulates showed radical scavenging, antioxidant capacity, ferric, and cupric reducing powers [78].

Antiparkinsonian
Aqueous methanol extracts of H. niger seeds significantly attenuated motor disabilities (akinesia, catalepsy, and reduced swim score) and striatal dopamine loss in -methyl-4-phenyl-1,2,3,6-tetrahydropyridine treated mice [74] and also against the stereotaxically induced rotenone model of Parkinson’s disease in rats due to antioxidant activity [79].

Antipyretic activity
H. albus methanolic extract showed a dose-dependent lowering effect of the body temperature up to 3 h in comparable to paracetamol [52,53]. Methanolic extract of seeds of H. niger exhibited antipyretic activity in yeast-induced pyrexia model [51].

Antispasmodic activity
The crude extract of H. niger seeds inhibited contractions induced by carbachol and potassium in a pattern similar to that of dicyclopine, but different from verapamil and atropine [65].

Bronchodilatory effect
The crude extract of H. niger exhibits airways relaxation, inhibition of the CCh-induced increase in the inspiratory pressure of anesthetized rats [57].

Cardioprotective activity
Oral administration of crude powder of the H. niger protected rats from the cardiac damage induced by lipid peroxidation and activation of antioxidant enzymes. It protected from cardiac necrosis as evidenced by the inhibitory activity on CK-Mb and TGL [80].

Insecticidal effect
Methanol extract of aerial parts and flower of H. niger had destroyed the mosquitoes Anopheles spp. larvae [81].

Contraindicated and adverse effect
Bazr-ul-Banj has an adverse effect on the brain as daur ul raas (vertigo), Sadr (Giddiness), Khuqa (Diptheria), Junoon (Mania) [27,28,45]. Ingestion of Bazr-ul-Banj by patients with medcal underlying problems such as Down syndrome, narrow-angle glaucoma, cardiac disease, pregnancy, and breast-feeding needs more attention fatalities were reported in children [26,82-85].

Unani formulations
According to USM, the choice of drugs for treatment is governed by three laws: (i) Quality of drug in terms of temperament, (ii) quantity of drug in terms of its weight and potency, and (iii) time of administration. The selection of drug depends on the nature and type of the disease. To achieve the target, single and compound formulations were prescribed. The Unani Drugs are being manufactured mostly in the classical form. Modern instruments are used in the preparation of drugs. Sometimes,
minor alterations are made in the dosage forms, and due care is taken not to depart from the essence. The Unani Drug Industry is preparing and marketing two types of drugs: (i) Classical Unani formulations and (ii) patent and proprietary products. Good manufacturing practices are followed to ensure quality control of these drugs. Some important classical Unani formulations in which Ayuwin kharasani is one of the ingredients mentioned in National Formulary of Unani Medicine.

CONCLUSION

The present review emphasizes the action and uses mentioned in Unani classical literature, ethnopharmacological, photochemistry, pharmacological reports, and toxicological information of Bazr-ul Banj (H. niger Linn.). It may be concluded that many pharmacological reports proved the claims of Unani scholar’s, for example, Musakkun-e-Alam [29,31,32] (Analgescic) [51-57], Ihlthab/warm [28,31,32,34,37,39] (inflammation) [51]; Ikhtelaj-e-Qalb [80,81]; Zeenqin Nafas [28,29,31,35]; (Broncholatory) [57], etc., many more action mentioned in Unani literature are required still proved. It is suggested that the results of experimental studies may be taking up forward for clinical safety and efficacy studies at a large sample size. It may be also observed that important Unani herb is having analgesic, antipyretic, anti-inflammatory, bronchodilator [51-57], anti diarrheal [65], antimicrobial [71-73], antioxidant [69-78], cardioprotective [80], Zeenqin Nafas [28,29,31,35], etc., Alvish-e-Tinkar [86] and all these activities are required to treat COVID-19 cases. It may also be recommended that scientific community should take up the job and try this Unani drug in cases of COVID-19 as an adjuvant therapy along with the contemporary treatment. This review also guides to the scientist working in different fields of medicine, photochemistry, pharmacology may take up the steps to establish the efficacy of Bazr-ul Banj in better way for the services in mankind in the future.

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AUTHORS’ CONTRIBUTIONS

The authors were actively searched the data on the topic from libraries of council and other Unani colleges and internet and equally contributed to the preparation of this manuscript.

CONFLICTS OF INTEREST

The author has no conflicts of interest to share.

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REFERENCES

1. Azhar MU, Khanam D, Aslam M, Tajuddin, Jafri MA. Plants with nephro toxic activity. J Sci Pharm 2004;5:97-103.
2. Azhar MU, Javed K, Jafri MA. Plant with nephroprotective activity. Hamdard Med 2005;48:33-43.
3. Azhar MU, Akhtar F, Aslam M, Anwar M, Tajuddin, Jafri MA. Nephroprotective activity of some herbal preparations. Hamdard Med 2005;49:110-5.
4. Azhar MU, Quaddusi N, Anjum N, Akhtar J, Hannan A, Jamil SS. Care of skin through Unani system of medicine. Unimed Kulliyat 2009;4:9-12.
5. Azhar MU, Quaddusi N, Parveen S, Tajuddin, Siddiqui KM, Siddiqui MK. Dua-us-sadaf (psoriasis) and role of herbal drugs. Hamdard Med 2010;53:51-7.
6. Azhar MU, Quaddusi N, Akhtar J, Akram U, Anjum N, Hannan A. Pharmacological activities of Shilajit (asphaltum)-a Unani drug. Indian J Unani Med 2011;4:5-8.
7. Azhar MU, Akhtar J, Akram U, Anjum N, Quaddusi N. Pharmacological activity of holy drug-zayoon (Olea europaea linn.).-review. Indian J Unani Med 2011;4:85-91.
8. Azhar MU, Anjum N, Quaddusi N, Akhtar J, Akram U, Yadav PK. Pharmacologically active nephroprotective plants-a review. Hamdard Med 2013;56:56-76.
9. Azhar MU, Anjum N, Quaddusi N. Pharmacological activity of kherna (Phoenix dactylifera Linn.). A review. Hamdard Med 2015;58:71-83.
10. Azhar MU, Anjum N, Quaddusi N. Pharmacologically active cardioprotective plants at a glance. Hamdard Med 2015;58:51-83.
11. Akram M, Azhar MU. Revend (rhubarb): An important Unani drug for prevention of nephrotoxicity. Int J Pharm Prof Res 2016;7:1333-40.
12. Anjum N, Quaddusi N, Azhar MU. Phytopharmacological aspects of bisehri booti (Aerva lantan) and its uses in Unani system of medicine-a review. Hippocratic J Unani Med 2017;12:51-64.
13. Azhar MU, Anjum N. Revand chini (Chinese rhubarb): A review on historical and Unani classical prospect. Int J Unani Integ Med 2019;3:11-8.
14. Akram M, Azhar MU, Anjum N, Quaddusi N. Phytopharmacology of Unani drug Zeerah siah (Corium corvi linn) -a review. J Pharmacogn Phytochem 2019;8:2772-82.
15. Azhar MU, Mustehasan, Alam M, Ahmad SG, Anjum N, Quaddusi N. Nephroprotective Unani drug khar-e-khasak khurd (Tribulus terrestris linn.)-a review. Int J Sci Res Biol Sci 2020;7:24-36.
16. Anonymous. The Wealth of India: A Dictionary of Raw Materials and Industrial Products, Raw Materials. Vol. 5. New Delhi: Publications and Information Directorate; 1997. p. 151-4.
17. Hocking GM. Henbane-healing herb of Hercules and of Appollo. Econ Bot 1947;1:306-16.
18. Bentley R, Trimen H. Medicinal Plants. London: J & A Churchill; 1880. p. 121.
19. Dyneuck W, Warden CJ, Hopper D. Pharmacographia Indica. Vol. 2. Dehradun: M/S Bishen Singh Mahendra Pal Singh; 1976. p. 313.
20. Volak J, Stodola J. The Illustrated Book of Herbs: Their Medicinal and Culinary Uses. London: Chancellor Press, Bounty Books; 1992.
21. Haas LF. Hyoscyamus niger (Henebane). J Neurol Neurosurg Psychiatry 1995;59:114.
22. Paulsen BP. Highlights through the history of plant medicine. In: Bernhoff A, editor. Bioactive Compounds in Plants-Benefits and Risks for Man and Animals. Oslo: Proceeding from a Symposium Held at the Norwegian Academy of Science and Letters; 2010.
23. Oztekin-Mat A. Plant poisoning cases in Turkey. Ann Pharm Fr 1994;52:260-5.
24. Fuchs J, Rauber-Luthy C, Kupferschmidt H, Kupper J, Kullak-Ublick GA, Ceschi A. Acute plant poisoning: Analysis of clinical features and circumstances of exposure. Clin Toxicol (Phila) 2011;49:67-80.
25. Moshiri M, Etemad L, Javidi S, Alizadeh A. Peganum harmala intoxication, a case report. Avicenna J Phytotherapy 2013;3:288-92.
26. Daneshvar S, Mirhosssain ME, Balali-Mood M. Hyoscyamus poisoning in Mashhad. Toxicon 1992;30:851.
27. Al-Snafi AE. Therapeutic importance of Hyoscyamus species grown in Iraq (Hyoscyamus albus, Hyoscyamus niger and Hyoscyamus reticulates)-a review. IOSR J Pharm 2018;8:18-32.
28. Ibn Baitar ZU. Kitab-al-Jami-ul-Mufradat-al Adwia-wal Aghzia. In: Daneshvar S, Mirhossaini ME, Balali-Mood M. editor. Bioactive Compounds in Plants-Benefits and Risks for Man and Animals. Oslo: Proceeding from a Symposium Held at the Norwegian Academy of Science and Letters; 2010.
29. Aziz MA. Munshi Nawal Kishore; 1955. p. 63.
30. Azhari MU, Khanam D, Aslam M, Tajuddin, Jafri MA. Plants with nephro toxic activity. J Sci Pharm 2004;5:97-103.
31. Azhad MU, Javed K, Jafri MA. Plant with nephroprotective activity. Hamdard Med 2005;48:33-43.
32. Azhad MU, Akhtar F, Aslam M, Anwar M, Tajuddin, Jafri MA. Nephroprotective activity of some herbal preparations. Hamdard Med 2005;49:110-5.
33. Azhad MU, Quaddusi N, Anjum N, Akhtar J, Hannan A, Jamil SS. Care of skin through Unani system of medicine. Unimed Kulliyat 2009;4:9-12.
34. Azhad MU, Quaddusi N, Akhtar J, Hannan A, Jamil SS. Care of skin through Unani system of medicine. Unimed Kulliyat 2009;4:9-12.
leaves in xanthine oxidase inhibition by selected Nerium oleander L. and L. leaves.

Azhar and Mustehasan 63. Bourebaba L, Saci S, Touguit D, Gali L, Terkmane S, Oukil N, 62. Patil AD, Patil AY, Raje AA. Antidepressant like property of 61. Kiasalari Z, Khalili M, Heidari H, Azizi Y. Anti-convulsant effect of 60. Reza HM, Mohammad H, Golnaz E, Gholamreza S. Effect of 59. Ma CY, Liu WK, Che CT. Lignanamides and nonalkaloidal components 57. Khan A, Gilani AH. Cardiovascular effects of Hyoscyamus niger L. 55. Moradi M, Ghosian MH, Poor YE. Assessment of 54. Kiasalari Z, Khalili M, Khoshnevisan F. Evaluation of the effect of 51. Begum S, Saxena B, Goyal M, Ranjan R, Joshi VB, Rao CV, 50. Ma CY, Liu WK, Che CT. The flowering hormones. Ber Dtsch Bot Ges 49. Begum S, Sahai M, Sussmuth R, Asai T, Hara N, Fujimoto Y. 48. Bernhoft A. A brief review on bioactive compounds in plants. In: 45. Ambasta SP. The Useful Plants of India. New Delhi: Publication and 44. Khar, B.N. Ayurveda. Vol. 1. New Delhi: Gyanprakashan; 2010. p. 184. 43. U.R. Khan. Unani Medicine. Vol. 1. New Delhi: Department of 42. Abdul Halim. Al Islamias; 1943. p. 130. 41. Lubhaya GR. Bayanul Advia. Vol. 1. New Delhi: Goswami Kutub 40. Khan MA. Muheet-e-Azam. Vol. 1. New Delhi: Central Council for 39. Hubal I. Kitab-al-Mukhtarat Fit Tib. Vol. 2. Hyderabad: Darul Ma'arif 38. Ali SS. Unani Advia Mufrada. 5. Hyderabad: Darul Ma’arif; 1999. p. 152. 37. Khan MA. Muheet-e-Azam. Vol. 1. New Delhi: Central Council for 36. Khan MA. Muheet-e-Azam. Vol. 1. New Delhi: Central Council for 35. Graev M, Fallani M. Collective poisoning caused by ingestion of 34. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 33. Graev M, Fallani M. Collective poisoning caused by ingestion of 32. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 31. Graev M, Fallani M. Collective poisoning caused by ingestion of 30. Graev M, Fallani M. Collective poisoning caused by ingestion of 29. Graev M, Fallani M. Collective poisoning caused by ingestion of 28. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 27. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 26. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 25. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 24. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 23. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 22. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 21. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 20. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 19. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 18. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 17. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 16. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 15. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 14. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 13. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 12. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 11. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 10. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 9. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 8. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 7. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 6. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 5. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 4. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 3. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 2. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 1. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning 0. Daneshvar S, Mirhossaini ME, Balali-Mood M. Hyoscyamus poisoning