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THERAPEUTIC EVALUATION OF ROLE OF AN UNANI FORMULATION IN THE MANAGEMENT OF *FASAAD-E-TASHAHHUM-FID-DAM* (DYSLIPIDEMIA) – A REVIEW

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ABSTRACT

Dyslipidemia is basically a condition of abnormality of lipid levels measured in the blood, which includes either overproduction or deficiency of lipoproteins or both. It is a major health problem all over the world as it plays a pivotal role in development of atherosclerosis, coronary artery disease (CAD), stroke and peripheral vascular disease (PVD) and is responsible for more than four million deaths annually. In view of high burden possess by dyslipidemia on community and non-availability of safe and effective treatment, medical fraternity is looking for more efficient and alternate management of it. In order to provide safe and more effective medicine for Dyslipidemia,a conscientious attempt has been made in this review study to explore the utility of this age old Unani formulation in the management of Dyslipidemia.

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INTRODUCTION

Dyslipidemia is basically a condition of abnormality of lipid levels measured in the blood, which includes either overproduction or deficiency of lipoproteins or both.[1][2]It may manifest as an elevation of serum total cholesterol or triglyceride or both, or low density lipoprotein (LDL) and decrease in high density lipoprotein (HDL) concentration.[3][4]It is a major health problem all over the world as it plays a pivotal role in development of atherosclerosis, coronary artery disease (CAD), stroke and peripheral vascular disease(PVD) and is responsible for more than four million deaths annually.[5][6]Cardiovascular disease (CVD) is the leading cause of death worldwide, and mortality due to CVD is higher in low- and middle-income countries. In India, there has been an alarming increase in the prevalence of CVD over the past two decades so much so that accounts for 24% of all deaths among adults aged 25–69 years. Asian Indians have been found to develop CVD at a younger age than other populations. The likely causes for the increase in the CVD rates include lifestyle changes associated with urbanization and the epidemiologic and nutritional transitions that accompany economic development. Dyslipidemia has been closely linked to the pathophysiology of CVD and is a key independent modifiable risk factor for cardiovascular disease.

Review of population based studies in India shows increasing mean total cholesterol levels.[7]Recent studies have reported that high cholesterol is present in 25–30% of urban and 15–20% rural subjects. This prevalence is lower in high-income countries. The most common dyslipidemia in India are borderline high LDL cholesterol, low HDL cholesterol and high triglycerides. Studies have reported that over a 20-year period total cholesterol, LDL cholesterol and triglyceride levels have increased among urban populations. Case-control studies have reported that there is significant association of coronary events with raised apolipoprotein B, total cholesterol, LDL cholesterol and non-HDL cholesterol and inverse association with high apolipoprotein and HDL cholesterol. It is estimated that by 2020 about 2.6 million Indians will be affected by CVD.[8] In view of high burden possess by dyslipidemia on community and non-availability of safe and effective treatment, medical fraternity is looking for more efficient management of it.

The Unani System of Medicine may provide a solution for the above problem discussed. In Unani system, presence of lipids in blood is termed as *Dusumat-e-Dam* and is described elaborately with regard to its ill effects as well as its management if fat is pathologically increased in blood.[9][10][11] When these oily substances of blood reaches to different organs of the body, they start to deposit there in the form of fat (*Shaham)* due to *Barid Mizaj* (Cold temperament) of those organs.[11]*Siman-e Mufrit* (obesity) has also been discussed extensively and managed in Unani system of medicine since centuries.[12].

The possible consequences of *Siman-e-Mufrit* like *Khafqan*(tachycardia), *Salabat-e-Nabz* (Atherosclerosis), *Sakta* (Stroke), *Zeeq-un-Nafas* (breathlessness), Coma and Sudden death are very much similar with the signs, symptoms and complications of dyslipidemia defined in conventional medicine.[10][13] Hence, *Siman-e-Mufrit* is a disease in which there is a deposition of *BaridRatabMad'da*[14] *(Shaham*/Lipid) and it falls under the category of *Amraz-e Balghamiya*.[15] The basic principle for treating the disease is *Ilaj-biz-Zid* (heteropathy) i.e., administration of drugs on the basis of *Mizaj* (temperament) opposite to particular disease and eliminating morbid matter from the body.[16]As the collective *Mizaj* of ingredients present in the Unani formulation is *Haar* (hot) and possessing properties including *Muhaz'zil* (emaciating),*Mulat'tif* (demulcent), *Muhal'lil* (resolvent), *Mujaf'fif-e-Rutubat* (desiccant) and *Muqaw'wi-e-Kabid* (hepatotonic) which helps in *Ta'deel* (normalization of Mizaj) and *Tanqia-e-Madda* (elimination of morbid matter) from the body.[17][18][19].In conventional medicine, standard treatment of dyslipidemia includes dietary modifications, exercise and pharmacological therapy either alone or in combination. Hypolipidemic agents have low efficacy and produces intolerable or life-threatening adverse effects, primarily if they are used for a longer duration [20]. In order to provide safe and more effective medicine for Dyslipidemia,a conscientious attempt has been made in this review study to explore the utility of this age old Unani formulation in the management of Dyslipidemia.

Unani Formulation [21][22]**:**

• Zeera Siyah (Carum-Cabrilinu)	(Caraway)	35 gms
• Tukhm Karafs (Apiumgraveolenslinn)	(Celery)	10.5 gms
• Marzenjosh (Oliganumvulgarelinn)	(Marjoram)	10.5 gms
• Boorah surkh (Sodium carbonate)	(Natroon)	10.5 gms
• TukhmSuddab (Rutagraveolanslinn)	(Rue)	7 gms
• Nankhaw (Trachyspermumammilinn)	(Bishop-weed)	14 gms

Method of preparation:
The drugs will be grinded to make *safoof* (powder) and sieved.

Drugs review
Zeera Siyah (Carum-Cabrilinu)
Botanical name: Carum-Cabrilinu[23][24][25-35] [36-39][40-48]
Family: Umbelliferae, Apaicae [25][28][36][37][39][43][45][48]

Vernacular names
Persian: Kumoon[29][31][37], Karoya[37], Jirah rumi[43]
Arabic: Karoya [37][43], Carawya [43], Kardiah [43], Sanot[33]
English: Black Caraway[37][45], Caraway[28][36][37][39][40][41][43][45], Common Caraway [37] [43]
Hindi: Kala Zara [37][45][48], Siyah Zeera[23][36][37][43][48], Zira[26][37][43][45][48]

Sanskrit: Asitrajiraka [37] [28], Bahrugandha [37] [43], Hridya [37] [43], Bhedanika [38] [43], Sushavi [37] [43], Jarana [37] [43], Krishna [37] [28] [43], Nila [43], Sugandha [37] [43], Jiraaa [28], Shodhna [28].
Urdu: Ziraasiyah[37], Kala Zira[37], Shahzira[28][43]
Unani: Zirasiyah[28], Kamoon[28], Kamoon-e-romi[28], Kahamoon[26], Kariton[26]
Parts used:Fruits[29],[35][32][41]
Temprament:Har[2] Yabis[2][32],Har[2] Yabis[3][49-55][11][29-31][52][53]
Actions:Hazim(Digestive)[37]Kasire Riyah(Antiflatulant)[37][31][15][32][26], Muqawwi(Gastric Tonic) [37] [29][32][52][53], Qabiz(Astringant)[30][32][26][55], Muhallile Riyah(Gas resolvant)[46][30][52][53][55], Mudirre Bol wa Haiz(Diuretic emonogogue) [46][30][31][32][26], Mulattif[30][46][53]
Medicinal Uses: Zofe Meda(Gastric Troubles), [37][31], Nafakhe Shikam [37][30][26]
Dosage:3-5gm [37][29][31][32]
Badal(Substitute):Zeera Safaid[29]
Muzirrat(Side effects**):**Lungs[30][31][53]
Musleh (Corrective**):**Kateera[29][30][31][32][53]
Ethnobotanical Actions: Anti Spasmodic[23][40][28][41], Diuretic[35][39][41][48][43][42]
Use: Bronchitis [39][42]

Tukhm Karafs (Apiumgraveolenslinn)
Botanical name: Apiumgraveolenslinn [23][37][50][47][39][41][48][24][43]
Family: Umbelliferae, Apaicae[23][50][39][28][34][36][41][48][24][43]
Vernacular names
Persian: Tukhm Karafs[37]
Arabic: Habbul Karfas[37]
English: Celery [37][32][39][28][34][36][48][49][50][43]
Hindi: Krafs[37][43]
Sanskrit: Ajamoda[23][37][32]28][34][36][48][50]
Urdu: Tukhm Karafs[37]
Unani: Krafs[37]
Parts used: Fruits and roots[31],[47][32][50][43]
Temprament:Har 2^{o}[37] Yabis2^{o}[30][31][44][46][32][52]
Actions:Mufattit(Lithotriptic)[37]Mushtahi(Appetizer)[37][46][30][31][47][32], Qabiz(Astringant)[30][32][26][55]
Medicinal Uses: Irqunnasa(Sciatica) [46][30], Niqris [37][30][46]
Dosage: Seed 3-5gms[37][29][31][32], Root 5-7 gms [31][47][32]
Badal (Substitute):Ajwine Khurasani (Hyoscyamus Niger)[30]
Muzirrat(Side effects**):**Pregnancy[30][32][53]
Musleh (Corrective**):**Aneesoon, Mastagi [30][31][32][52][53]
Ethnobotanical Actions: Anti infalmmatory[39], Nervine tonic[28][36]
Use: Bronchitis [23][28][39], Asthama[23][28][39],

Marzenjosh (Oliganumvulgarelinn)
Botanical name: Oliganumvulgarelinn [23][28][34][24][25 [39]
Family: Labiacea[39][28][34]
Vernacular names
Persian: Marzenjosh [29][26]
Arabic: Marzenjosh [43], Habbul Qatan[26]
English: Sweet Marjoram [39][32][39][28][34][36][48][50][43]
Hindi: Murwa[25][43]
Sanskrit: Gandhapatra[43]
Urdu: Markusha[43]
Unani: Marzenjosh [28]
Parts used: Leaves and seeds[25-29]
Temprament:Har 2^{o}[46] Yabis2^{o}[46]
Actions:Muhallile awram(Antiinflammatory)[46][30][32], Munaffise balgham(Expectorant)[32]
Medicinal Uses: Khafqan(Palpitation)[46], Falij[29]
Dosage: Seed 6-9 gms [32], 5-7 gms [30]
Badal(Substitute):Afsanteen,Tulsi(29,30,32)
Muzirrat(Side effects**):**Gurdah,Masana[46][32][53]
Musleh (Corrective**):**Tukhm Kasni,Tukhm Khurfa [29][32][55][53]
Ethnobotanical Actions: Colic[38], Dyspepsia[34]
Use: Paralysis [25], Asthama[23][25][43]

Boora Surkh (Sodium carbonate)[22]

Boorah surkh is a kind of salt. *Boorah Surkh* is also called as *Natroon*. Best quality of *Natroon* is obtained from Egypt. It is soft, salty in taste .Somewhat bitterness in it. In Persian it is called as *Boorah Sulemaani*. Now it is confirmed that Boorah is Sodium carbonate.

Temperment: Hot Dry

Uses: It is used in leucoderma by its local Application skin turns red. For seberrohic dermatitis it is extremely useful.

TukhmSuddab (Rutagraveolanslinn)

Botanical name: Ruta Graveolens Linn[23][39][40][28][34][25][43]

Family: Rutacae[23][39][28][34][25][43]

Vernacular names Persian: Tukhm-e-Suddab, Sudab[43]

Arabic: Zafri[51], Fejan[43], Aruda[43]

English: Garden Rue[31][28][34][42][43], Common Rue[42][43], Herb of grace[43]

Hindi: Sanol[29][31],Satari[25][51][43],Sadamat[51],Satap[34]

Sanskrit: Sadapaha[34],[43], Somalata[23],[34],[43]

Urdu: Sudab[43]

Unani: Feejan[51], Safayan[51], Afayan[51], Sudaab[28], Suddab [28]

Parts used: Leaves and seeds[29-31]

Temprament:Har 3^{o}[46] Yabis3^{o}[46]

Actions:Muhallile awram(Antiinflammatory)[46][30][32], Mufatteh Sudad(Deobstruent)[55],[46],[29],[30],[31]

Medicinal Uses: Qate Nafakhe Shikam(Antiflatulent)[55],[46],[31],[44], Irquunisa1(Sciatica)[17]

Dosage: Seed -10gm [46]

Badal(Substitute): Saatar Farsi (Zataria Multiflora)[46]

Muzirrat(Side effects**)**: Zoafe basarat(For eyes)[29]

Musleh (Corrective**)**: Anisoon (Pampinella Anisum)[29]

Chemical Constituents: Rutin[43],Essential oil[23]

Ethnobotanical Actions: Antiinflammatory[40][28]

Use: Colic [42][43]

Nankhaw (Trachyspermum ammi linn)[1-6]

Botanical name: Trachyspermum ammi linn)[1-6]

Family: Umbelliferae, Apiacae[24][27][28][25]

Vernacular names

Persian: Nankhah[29]

Arabic: Kamoone malooki[29]

English: Bishop's Weed[26][34]

Hindi: Ajwain[29]

Sanskrit: Yavani[28]

Urdu: Ajwain[37]

Unani: Basliqon[26]

Parts used: Leaves and seeds [29-31]

Temprament: Hot3^{0}Dry3^{0}[55]

Actions: Jali(Detergant)[29][31], Muqawwi-e-Bah(Aphrodisiac)[30][53]

Medicinal Uses: Zoaf-e-Hazm(Indigestion)[26], Qate Nafakhe Shikam(Antiflatulent)[55-60],[46],[31],[44], Irquunisa1(Sciatica)[17]

Dosage: Seed -3-5gm [29]

Badal(Substitute): Kalonji(Nigella Sativa)[29]

Muzirrat(Side effects**):** Musadded(Obstruent)[29]

Musleh (Corrective**):** kishneez khusk(Coriandrum Sativum)[29]

Chemical Constituents: Rutin[43],Essential oil[23]

Ethnobotanical Actions: Carminative[35][61-65]

Use: Colic [36][65-70]

DISCUSSION

Though UnaniMedicines has been in practice since centuries to treat various types of metabolic disorders in Unani medicine, this review paper is a concerted attempt to bring it to medical domain for the larger benefit. Study conducted on *Trachyspermum ammi* essential oil for antimicrobial and antioxidant activities and it is observed that the essential oil exhibits potent antibacterial and antifungal activity, which supports its use in traditional medicine for its antiseptic properties[54**].**Essential oil of Nankhaw (Trachyspermum ammi linn) has antihyperlipidemic effect in cholesterol fed rabbits. While in other studies, extract of TukhmSuddab has effect on lipid profile, it decreases intracellular cholesterol due to an upregulation of LDL receptors, and also Neuroprotective properties of Pampinella Anisum after hypoxic ischeamic injury both in vitro and vivo as mentioned above.

Possible mechanism that was proposed that this Unani formulation increases the production of LDL receptors. [70-76]

CONCLUSION

Above mentioned herbal Medicines play important role in the management of Dyslipidemia. , provided that the drug should be used judiciously with all the facts taken into consideration. Besides the fundamental importance of this pharmacotherapeutic methodology there is a problem of lack of uniform standardisation. It therefore apparently seems essential to standardize it and to develop certain scientific parameters for evaluation of the efficacy of this drug as it is cost effective, user friendly devoid of adverse effects. Hence scientific studies are being under taken to validate this age old drug in different Unani research institutions of India so that the benefits may be reaped by large section of society. This therapy must also be evaluated for prophylactic use so that some of the impending attacks / bouts of disease can be averted.

List of abbreviations:

et al	Et alii or et alia (and others)
p	P value
HDL	High density lipoprotein
<	Lesser than,
LDL	Low density lipoprotein
>	Greater than
VLDL	Very low density lipoprotein
≤	Lesser or equal to
GIT	Gastrointestinal tract
≥	Greater or equal to

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REFERENCES

1. Fauci AS, Kasper DL, Hauser SL, Longo DL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. 19thed. New York: McGraw Hill education; 2015: 2438-49.
2. Humes HD. Kelley's Textbook of Internal Medicine. 4th ed. USA: Lippincott Williams & Wilkins; 2000:72-87.
3. Munjal YP, Sharma SK, Shah SN, Pangtey GS, Prakash A, Agarwal AK, et al. API Textbook of Medicine. 9th ed. Munjal YP, editor. Mumbai: The Association of Physicians of India; 2012:1235-39.
4. Misra A, Luthra K, Vikram NK. Dyslipidemia in Asian Indians: Determinants and Significance. JAPI. 2004 February; 52:137-42.
5. World Health Organization. Quantifying selected major risks to health. In: The World Health Report 2002 - Reducing Risks, Promoting Healthy Life. Ch. 4. Geneva: World Health Organization; 2002:58-59.
6. Sigh AK, Sigh SK, Sigh N, Agrawal N, Gopal K. Obesity and dyslipidemia. Int J Biol Med Res. 2011; 2(3): 824 - 28.
7. 7.Prevalence of dyslipidemia in urban and rural india:the ICMR-INDIAB study,Joshi SR, Anjana RM, Deepa M, Pradeepa R, Bhansali A, Dhandania VK, Joshi PP, Unnikrishnan R, Nirmal E, Subashini R, Madhu SV, Rao PV, Das AK, Kaur T, Shukla DK, Mohan V; ICMR-INDIAB Collaborative Study Group.PLoS One. 2014 May 9;9(5):e96808
8. Recent trends in epidemiology of dyslipidemias in India. *Indian Heart Journal*, Volume 69, Issue 3, Pages 382-392 Rajeev Gupta, Ravinder S. Rao, AnoopMisra, Samin K. Sharma.
9. Jalinoos. KitabfilMizaj (Urdu Translation by Rahman HSZ). Aligarh: IbnSina Academy; 2008:138-41.
10. Nafis I. MoalajateNafisi. Lucknow: Munshi Naval Kishore; 1324 Hijri: 537-39.
11. Emtiazy M, Keshavaraz M, Khodadoost M, Kamalinejad M, Gooshahgir SA, Bajestani HS et al. Relation between Body Humors and/ Hypercholesterolemia: An Iranian Traditional Medicine Perspective Based on the Teaching of Avicenna. Iranian Red Crescent Medical Journal. 2012 March; 14(3): 133-38.
12. Kamal R,Aleem S. Clinical evaluation of the efficiacy of a combaination of zanjabeel(Zingiberofficinalis) and amla (Emblicaofficinalis) in hyperlipidaemia. Indian Journal of Traditional Knowledge. 2009 July; 8(3):413-16.
13. Jurjani AHI. ZakhiraKhwarzamShahi (Urdu translation by Khan HH). Vol-8. New Delhi: IdaraKitab-ul-Shifa; 2010: 23-28.
14. Chandpuri K. MojizulQanoon. 3rd ed. Delhi: Qaumi Council BarayeFarogh Urdu Zaban; 1998:99, 459.
15. Kabeeruddin HM. IfadaeKabir. 1st ed. New Delhi: QaumiKaunsilBarayeFarogh Urdu Zuban; 2001:58.
16. Nafis IB. Kulliyat-e-Nafisi (Urdu Translation by Kabeeruddin HM). New Delhi: IdaraKitab-us-Shifa; 1954:460-462.
17. IbnSina. Al Qanoon fit Tib (Urdu translation by Kantoori GH).Vol.2, Vol. 4. New Delhi: IdaraKitabulShifa; 2010:404, 1444-47.
18. Tariq AHN. Taj-ul-Mufradat. New Delhi: IdaraKitab-us-Shifa; 2010: 25,172,308,643-44.
19. Maghribi ASBI. Kitab al-Fath Fi al-Tadawi (Urdu translation). 1sted; 2007:68, 170-71.
20. Jellinger PS, Smith DA, Mehta AE, Ganda O, Handelsman Y, Rodbard HW, et al. American Association Of Clinical Endocrinologist Guidlines for management of dyslipidemia and prevention of atherosclerosis. EndocrPract. 2012 March/April; 18(1):12.
21. *Kitab-ul-Mujribaat-Akbari-Farsi* (*Mohammad Akbar Arzani*)(MunshiNawalKishor) Printed at Kanpur in Feb. 1874 Page 212.
22. *Khazain-Ul-Advia* Hakeem Najam-Gani (IdaraKitab-ul-Shafa) Delhi Page 401.

23. Chopra R.N.et al. Glossary of Indian Medicinal Plants.1st ed. 4th Reprint., New Delhi:National Institute of Science and Communication; 1996: 182,121, 217, 53, 245.
24. Rastogi R P, Mehrotra BN. Compendium of Indian Medicinal Plants Vol III. New Delhi:National Institute of Science Communication and Information Resources; Reprint 2006: 460, 298, 560, 139, 652, 54
25. Anonymous. The Wealth of India. Vol. 4,6,9,10,. New Delhi: Council of Scientific and Industrial Research; 1995: 1,226,52,95,267
26. Baitar Z A I. Aljamiul Mufradat Al Advia wa Al Aghzia (Urdu Translation) Volume 4,5. New Delhi: CCRUM Ministry of Health and Family Welfare, Government of India; 2003: 253, 314, 198, 379,139
27. Anonymous. Direct uses of Medicinal Plants & their Identification. Ist ed.New Delhi:Rashtra Vardhans Swarup & sons;2008:342,35, 114, 153
28. Khare C.P.Indian Medicinal Plants-An illustrated Dictionary. NewYork: Springer Science & Business Media, Spring Street; 2007: 124,271,56,665,566,452
29. Rafeequddin Mohd. Kanzul Advia Mufrada. Aligarh: Muslim University Press; 1985:610,631,154,394,543,139,72,182
30. Hakeem Abdul. Bustanul Mufradat Jadeed. New Delhi: Idara Kitab ul Shifa ; 2002:516,272,186,56,160,58,323
31. Kabeeruddin Hakeem. Makhzanul Mufradat.Delhi: Ejaz Publishing House D;YNM:511,112,105,450,336, 322, 64
32. Naseer TA. Tajul Mufradat Tahqiqate khuasul Advia. New Delhi: Idara Kitab ul Shifa; YNM: 643,365,466,156,33, 228,36
33. Harwi Muhammad B. Ainul Hayat(Urdu Translation by Hk Syed Zillur Rahman). Aligarh: Ibne Sina Academy; 2007: 239
34. Nadkarni KM. Indian Materia Medica. Vol.1 2nd ed. Mumbai: Popular Prakashan;2010: 148,557, 1081, 1028, 119,875
35. Chatterjee Asima, Pakrashi S C. The Treatise of Indian Medicinal Plants. Vol IV. New Delhi: National Institute of Science Communication, CSIR; 1995: 42, 37, 45
36. Shiva MP, Lehri A. Aromatic and Medicinal Plants. Dehradun: International Book Distributors; 2007: 81, 160, 19, 24
37. Anonymous. The Unani Pharmacopoeia of Indian. Part 1. Volume1,2,4. New Delhi:CCRUM, Department of AYUSH, Ministry of Health & Family Welfare Government of India; 2008:93, 92,15,4
38. Farooq S. 555 Medicinal Plants: Field and Laboratory Manual(Identification with Its Phytochemical and Invitro Studies Data). Dehradun: International Book Distributors; 2005: 298, 107
39. Chevallier Andrew.The Encyclopedia of Medicinal Plants.London:Dorling Kindersly Ltd;1996: 262, 240,182, 210
40. Van Wyk BE, Wink M. Medicinal Plants of the World. 1st ed. South Africa: Briza Publication; 2009: 145, 280, 82, 399, 221
41. Sharma R. Medicinal Plants of India-An Encyclopedia., Delhi: Daya Publishing House; 2003:179, 108, 45, 22
42. Longman O. Indian Medicinal Plants: A Compendium of 500 Species. Vol 3,5. Chennai: Orient Longman Pvt Ltd; 2004:50,22
43. Kirtikar KR , Basu B.D. Indian Medicinal Plants. Vol I-III .2nd ed., Dehradun: International Book Distributor; 1981: 453, 1199,1201,1985
44. Rushd Ibn. Kitab ul Kulliyat (Urdu Translation). 2nd edition. New Delhi: CCRUM Ministry of Health and Family Welfare, Government of India; 1987:302,299, 293,327
45. Gupta AK, Sharma M. Review of Indian Medicinal Plants. Vol 5. New Delhi:Medicinal Plants Unit ICMR; 2008: 575
46. Ghani Hakim N. Khazainatul Advia. Part 1. New Delhi: Idara Kitab ul Shifa Daryaganj;YNM:1175, 1236, 401,206, 775,206, 793, 202.
47. Anonymous. Standardisation of Single Drugs of Unani Medicine. Part III. 1st ed. New Delhi: CCRUM, Ministry of Health & Family welfare, Government of India;1997: 302
48. Anonymous. The Wealth of India. Vol. 3. New Delhi: Council of Scientific and Industrial Research; 1992: 313
49. Anonymous. The Wealth of India. Vol. 1. New Delhi: Council of Scientific and Industrial Research; 1985: 320
50. Gupta AK, Sharma M. Review of Indian Medicinal Plants. Vol 2. New Delhi:Medicinal Plants Unit ICMR; 2004: 418
51. Baitar Z A I. Aljamiul Mufradat Al Advia wa Al Aghzia (Urdu Translation) Volume II New Delhi: CCRUM Ministry of Health and Family Welfare, Government of India; 2000: 283
52. Baitar Z A I. Aljamiul Mufradat Al Advia wa Al Aghzia (Urdu Translation) Volume III New Delhi: CCRUM Ministry of Health and Family Welfare, Government of India; 1999: 27
53. Rastogi R P, Mehrotra BN. Compendium of Indian Medicinal Plants Vol V. New Delhi: National Institute of Science Communication and Information Resources; 2005: 588,375,740,859,70
54. Baitar Z A I. Aljamiul Mufradat Al Advia wa Al Aghzia (Urdu Translation) Volume III New Delhi: CCRUM Ministry of Health and Family Welfare, Government of India; 1985: 313
55. Azeez Hakeem A. Mufradat-e-Azeezi.,Lucknow: Maktaba Sahitya Mandir Press Ltd; 194838: 37, 33, 30, 29,
56. Ansari Hakeem J A. Taleemul Advia. Lucknow: Daftar Takmil-ut-Tibb College; 1930: 5, 16, 25, 106, 102, 89
57. Vohra SB, Khan SY. Animal origin Drugs used in Unani Medicine. New Delhi: Vikas Publishing House Pvt Ltd; 1979: 40,69, 123
58. Evans WC. Trease and Evans pharmacognosy. 6th ed. China: Saunders;2009: 481
59. Ibnul Quff. Kitabul Umda Fil Jarahat (Urdu translation). Vol. 1. New Delhi: CCRUM; 1986: 243, 244, 263, 289, 291, 290.
60. Naik P. Essentials of Biochemistry. New Delhi: Jaypee Brothers; 2012: 153.
61. Anonymous. National Formulary of Unani Medicine Part II Vol-1, CCRUM, Department of AYUSH, Ministry of Health and Family welfare, Govt of India, 2007:157.
62. Aazam T, Mohammad R J , Hossein N. Changes of lipid profiles, glucose, and haemogram after administration of Ruta graveolens extract in diabetic rats. Comp Clin Pathol 2012(21):1587–1592.

63. Hassan G, Sepideh A, Ashkan J, Aghil S. Chemical constituents, antimicrobial and antioxidative effects of Trachyspermum Ammi essential oil, Journal of Food Processing and Preservation, 2013: 1-6.
64. Eun-Mi Choi and Jae-Kwan Hwang. Antiinflammatory, analgesic and antioxidant activities of the fruit of Foeniculum vulgare, Fitoterapia 2004(75): 557–
65. Hepatoprotective effect of *Foeniculum vulgare* essential oil, Fitoterapia 2003(74): 317–319.
66. Sanaa Lahlou, Adil Tahraoui, Zafar Israili, Badia Lyoussi. Diuretic activity of the aqueous extracts of *Carum carvi* and *Tanacetum vulgare* in normal rats. Journal of Ethnopharmacology 2007(110): 458–463
67. Nicolas, Iacobellis, Pietro L C, Francesco C, And Felice S. Antibacterial Activity of Cuminum cyminum L. and Carum carvi L. Essential Oils. J.Agri.Food Chemistry.2005 (53): 57-61.
68. Gorge et al. Vasorelaxant activity of extracts obtained from *Apium graveolens*:Possible source for vasorelaxant molecules isolation with potential antihypertensive effect. Asian Pac J Trop Biomed 2013 3(10): 776-779.
69. Sameh Baananou *et.al.*, Anti-inflammatory and Analgesic Activities of Tunisian *Apium graveolens* L. Leaves Extracts in Rats, JBAPN 2012 2(4) :225 – 231.
70. Abdel-Tawab H. Mossa, Amel A. Refaie, Amal Ramadan and Jalloul Bouajila. Antimutagenic Effect of Origanum majorana L. Essential Oil Against Prallethrin-Induced Genotoxic Damage in Rat Bone Marrow Cells. J Med Food 2013 16(10): 1–7.
71. Pimple BP, Kadam PV, Patil MJ. Comparative antihyperglycaemic and antihyperlipidemic effect of Origanum majorana extracts in NIDDM rats, Orient Pharm Exp Med 2012(12):41–50
72. Ghufran A, Laeeque A, Khan NA. The effect of Luk maghsool on diet induced hyperlipidemia in albino rats. Hippocratic Journal of Unani Medicine 2011;6(2):155-
73. S.K. Raghav, B. Gupta, C. Agrawal, K. Goswami, H.R. Das. Anti-inflammatory effect of *Ruta graveolens* L. in murine macrophage cells. Journal of Ethnopharmacology 2006(104): 234–239
74. Baghdadi Ibn Hubal. Kitabul Mukhtarat Fit Tib (Urdu translation). Vol. 1, 2. New Delhi: CCRUM; 2005: 149, 263.
75. Abdur Rasheed, Therapeutic evaluation of Kalonji(Nigella Sativa) in Dyslipidemia [Dissertation], National Institute of Unani Medicine, RGUHS, Bangalore.2012
76. Sheeraz etal, Rational approach towards the role of Kalawnji (Nigella Sativa linn) in Marz-e-Akyas Khusyatur Rehm (Polycystic Ovarian Syndrome), Indo American Journal of Pharmaceutical Research, 8(5); 2018: 1089-1096.

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