

POTENTIAL EFFECTS OF UNANI HERBS IN THE MANAGEMENT OF OBESITY AND ITS RELATED COMORBIDITIES – A SYSTEMATIC REVIEW

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ABSTRACT

Obesity should be viewed as an underlying risk factor for chronic diseases. Thus the potency of clinical management of obese patients depends on the total risk profile. Despite of high prevalence of the disease and its negative consequences on health, there is no availability of safe and effective treatment in conventional medicine. Unani physicians have mentioned numerous regimens and measures for managing obesity that can have therapeutic effects so as to prevent and combat this disease. This review aimed to survey the literature covering the Unani herbs with anti-obesity activity, and to re-evaluate the available scientific data.

KEYWORDS: Obesity, Unani, herbs, comorbidities, management.

INTRODUCTION

Obesity is a state of excess adipose tissue mass which is more effectively defined by assessing linkage to morbidity or mortality with BMI of 30kg/m² or higher.^[1] Number of factors play role in obesity which are genetic, environmental, cultural, endocrinal, socioeconomic, behavioural, situational, drug induced, metabolic and physiological but fundamental basis is energy imbalance.^[1,2] WHO added that by 2015, approximately 2.3 billion adults will be overweight and more than 700 million will be obese. Obesity statistics

are rising hazardously at an astounding 70 million in India.^[3] Overweight and obesity are attributable to about 44% of the diabetes burden, 23% of the ischemic heart disease burden and 7% to 41% of certain cancer burdens.^[4] Unani physicians comprehensively described obesity termed as *Samne Mufrit* and *Farbahi* in their treatise.^[5] Obesity is considered as a *Balghami* (phlegmatic) disorder in Unani medicine which developed from poor metabolic functioning, combined with bad eating habits and excessive adoption of *Barid tadabeer* (cold regimens).^[5,6] Obese persons suffer from difficulty in movement, breathlessness, palpitation, distended abdomen and fatigue which later on lead towards morbid complications.^[5,7,8] Modest weight loss of 5-10% can reduce comorbid conditions. The preferred treatment modality for weight loss is dieting and physical exercise. But due to busy schedules and sedentary lifestyle there is a gradual shift towards an increase use of drugs.^[4]

In classical text physicians described treatment for *Samne Mufrit* by both single drugs (Table-1) and as well as compound formulations (Table-2). Obesity is considered under *Balghami Amraaz* (phlegmatic disease), as per Unani basic principle of treatment physicians recommend *Ilaj bil zid* (heteropathy) to ameliorate the derangement of temperament like drugs having *muhazzil* (anti-obesity), *musakhhin* (calorific), *muhallil* (resolvent), *mulattif* (demulcent), *mulayyin* (laxative), *mujaffif* (dessicant), along with *qawi mudir baul* (strong diuretics) properties and regimens which increased *tahleel* (dissolution) and brings *yaboosat* (dryness) by eliminating excess *ratoobat* (moistness) in order to reduce body weight.^[9]

Those drugs should be given which attenuate humours, reduce weight or cause dryness in body.^[10] Commonly drugs used in *Wajaul Mufasil* (osteoarthritis) having demulcent and diuretic property are recommended for management of obesity also.^[7,9] There are numerous other Unani drugs also which are not mentioned for reduction in weight directly but their use has been indicated in obesity in modern literature (Table-3). Along with anti-obesity action these drugs also possess other pharmacological activities which are helpful in controlling obesity risk factors.

TABLE 1: Unani herbs indicated for obesity in classical literature. [7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24]

Unani Name	Botanical Name	Common Name	Activities
Ajmood	<i>Apium leptophyllum</i> (Pers.) F.Muell. ex Benth.	Celery	Anti-inflammatory, Diuretic
Anisoon	<i>Pimpinella anisum</i> Linn.	Aniseed	Carminative, Diuretic, Diaphoretic, Laxative
Anjeer	<i>Ficus carica</i> Linn.	Fig	Catabolic, Demulcent, Diuretic, Hypoglycemic, Laxative
Asaaroon	<i>Asarum europium</i> Linn.	Hazelwort	Anti-inflammatory, Diuretic, Deobstructant
Ayaraj	<i>Aloe barbadensis</i> Mill.	Indian Aloe	Anti-inflammatory, Hypocholesterolemic, Hypoglycemic, Demulcent, Laxative, Purgative
Baadyan	<i>Foeniculum vulgare</i> Mill.	Fennel	Anti-inflammatory, Antioxidant, Cardiotonic, Choleric, Diaphoretic, Diuretic, Laxative, Stimulant
Balchadh	<i>Nardostachys jatamansi</i> DC.	Jatamansi	Carminative, Diuretic, Laxative, Stimulant, Hypotensive
Chirchita	<i>Achyranthes aspera</i> Linn.	Chaff-flower	Diuretic, Hypoglycemic, Hypotensive Hepatoprotective, Hypolipidemic
Dhaniya	<i>Coriandrum sativum</i> Linn.	Coriander	Diuretic, Hypoglycemic, Hypotensive Laxative, Lipolytic, Stimulant
Filfil	<i>Piper nigrum</i> Linn.	Black pepper	Antioxidant, Diuretic, Hypotensive, Hypocholesterolemic, Stimulant
Fitra Saliyoon	<i>Petroselinum crispum</i> (Mill.) Airy-Shaw.	Parsley	Anti-inflammatory, Carminative, Diuretic, Hypotensive, Hypouricemic, Laxative
Gandana	<i>Allium ascalonicum</i> Linn.	Shellot	Fibrinolytic, Hypocholesterolaemic
Haliyoon	<i>Asparagus officinalis</i> Linn.	Asparagus	Anti-inflammatory, Diuretic, Laxative
Halon	<i>Lepidium sativum</i> Linn.	Garden cress	Diuretic, Laxative, Stimulant
Haasha	<i>Thymus serpyllum</i> Linn.	Mother of thyme	Diuretic, Hypotensive, Thyrotropic
Juntyyana	<i>Gentiana lutea</i> Linn.	Gentian	Anti-inflammatory, Choleric, Stimulant
Kahruba	<i>Pinus succinifera</i> (Goppert) Cornw.	Baltic Amber	Cardiac tonic, Styptic
Karafs	<i>Apium graveolens</i> Linn.	Celery	Anti-inflammatory, Antioxidant, Choleric, Diuretic, Hypoglycemic, Hypotensive, Stimulant
Kasni	<i>Cichorium intybus</i> Linn.	Chicory	Cardiotonic, Diuretic, Demulcent, Hypocholesterolemic, Hypoglycemic, Hepatoprotective, Laxative
Khatmi	<i>Althaea officinalis</i> Linn.	Marshmallow	Anti-inflammatory, Demulcent, Diuretic, Deobstruent, Emollient, Hypoglycemic
Kundur	<i>Boswellia serrata</i> Roxb ex Colebr.	Indian Olibanum	Anti-inflammatory, Anti-atherosclerotic, Diaphoretic, Diuretic, Demulcent Hypotensive, Hypoglycemic
Lehsun	<i>Allium sativum</i> Linn.	Garlic	Anti-inflammatory, Anti-hypertensive, Antioxidant, Anti-atherogenic, Cardiotonic, Choleric, Fibrinolytic, Diaphoretic, Hepatoprotective, Hypocholesterolemic, Hypoglycemic, Hypolipidemic

Luk Maghsool	<i>Laccifer lacca</i>	Lac	Anti-inflammatory, Antiobesity, Deobstruent, Hypolipidemic
Muqil	<i>Commiphora mukul</i> (Hook. ex Stocks) Engl.	Myrrh	Anti-inflammatory, Antioxidant, Cardioprotective, Demulcent, Hypoglycemic, Hypotriglyceridemic, Hypocholesterolemic, Lipolytic, Stimulant
Marzanjosh	<i>Origanum majorana</i> Linn.	Sweet marjoram	Antioxidant, Carminative, Diaphoretic, Diuretic
Nankhwah	<i>Trachyspermum ammi</i> (Linn.) Sprague.	Ajowan	Diuretic, Diaphoretic, Laxative, Stimulant
Piyaaz	<i>Allium cepa</i> Linn.	Onion	Anti-inflammatory, Anti-atherosclerotic, Antioxidant, Choleric, Deobstruent, Diaphoretic, Diuretic, Hypotensive, Hypocholesterolemic, Hypoglycemic, Hypolipidemic, Lipolytic, Lipoxigenase, Stimulant
Salaras	<i>Liquidamber orientalis</i> Linn.	Storax	Anti-inflammatory, Antioxidant, Hypotensive, Hepatoprotective
Sandaros	<i>Trachylobium hornemannianum</i> Hayne.	Gum Cobal	Anti-obesity, Diuretic, Demulcent
Shahitra	<i>Fumaria officinalis</i> Linn.	Fumitory	Anti-inflammatory, Choleric, Diaphoretic, Diuretic, Laxative, Stimulant
Soya	<i>Anethum sowa</i> Roxb.ex Flem.	Dill	Hypoglycemic, Hypotensive, Diuretic, Laxative, Stimulant
Suddab	<i>Ruta graveolens</i> Linn.	Garden Rue	Anti-inflammatory, Antioxidant, Choleric, Diuretic, Diaphoretic, Ecboic Hepatoprotective, Hypoglycemic, Hypotensive, Lipolytic, Stimulant,
Turbud	<i>Operculina turpethum</i> (Linn.) Silva Manso.	Jalap	Anti-inflammatory, Diuretic, Laxative, Purgative
Zarawanad Mudahraj	<i>Aristolochia rotunda</i> Linn.	Birthwort	Anti-inflammatory, Antioxidant, Stimulant
Zeera	<i>Carum carvi</i> Linn.	Caraway	Anti-inflammatory, Carminative, Choleric, Diuretic, Stimulant

TABLE 2: Unani compound formulations for obesity management. [7, 8,9,13,14,15,16]

Unani Compound Formulations			
Amroosiya	Dawaulluk	Itrifal sagheer	Majoon Kamooni
Anqardiya	Dawaul Kurkum	Jawarish Falafali	TiryaqeKabir
Asanasiya	Dawae Quwa	Jawarish Kamooni	Sanjareena
Baladari	Dawae Murakkab	Majoon Baladri	Sufoofe Muhazzil

TABLE 3: Unani herbs possessing anti-obesity action in modern literature. [11,18,19,21]

Unani name	Botanical name	English name	Activities
Afsanteen-e-Hindi	<i>Artemisia vulgaris</i> Linn. var. <i>nilagirica</i> Clarke.	Mugwort	Diaphoretic, Diuretic, Demulcent, Hypoglycemic, Immunostimulant
Akhrot	<i>Juglans regia</i> Linn.	Walnut	Anti-inflammatory, Antioxidant, Diuretic, Hypoglycaemic, Laxative
Ananas	<i>Ananas comosus</i> (Linn.)Merrill	Pineapple	Anti-inflammatory, Antioxidant, Diaphoretic, Diuretic, Laxative, Lipolytic

Angur-e-khiras	<i>Arctostaphylos uva-ursi</i> Spreng.	Bearberry	Diuretic, Hypocholesterolemic, Hypoglycemic, Hypotensive, Laxative
Arhar	<i>Cajanus cajan</i> (Linn.) Millsp.	Pigeon pea	Diuretic, Hypotriglyceridemic, Hypocholesterolaemic, Hypolipidemic, Laxative
Aspaghhol	<i>Plantago ovata</i> Forsk.	Blond Psyllium	Diuretic, Demulcent, Hepatoprotective, Hypoglycemic, Hypouricemic, Hypocholesterolemic, Laxative
Baranjaasif	<i>Leonurus cardiaca</i> Linn.	Mother wort	Anti-inflammatory, Antiplatelet aggregation, Cardiotonic, Diuretic, Hypotensive, Hypolipidemic
Baingan	<i>Solanum melongena</i> Linn.	Eggplant	Anti-atherosclerotic Antioxidant, Hypocholesterolemic, Hypotensive, Hypolipidemic, Proteinase Inhibitor, Stimulant.
Bed Saadaa	<i>Salix alba</i> Linn.	White Willow	Anti-inflammatory, Antirheumatic, Febrifuge
Ber	<i>Ziziphus jujuba</i> (Lam.) Gaertn. non- Mill.	Indian Jujube	Cardiotonic, Diaphoretic, Laxative
Bijaysaar	<i>Pterocarpus marsupium</i> Roxb.	Indian Kino tree	Hypoglycemic, Hypolipidemic
Guaar phalli	<i>Cyamopsis tetragonoloba</i> (Linn.)Taub.	Guar	Appetite depressor, Hypolipidemic, Hypoglycemic, Lipolytic, Laxative
Gular	<i>Ficus racemosa</i> Linn.	Cluster Fig	Carminative, Laxative
Gurmaar Buuti	<i>Gymnema sylvestre</i> B. Br.	Gymnema	Diuretic, Cardiotonic, Hypocholesterolemic, Hypotriglyceridemic, Hypoglycemic, Insulinogenic, Laxative
Kaasni Sahraayi	<i>Taraxacum officinale</i> G.H.Weber exWigger.	Dandelionf	Anti-inflammatory, Antioxidant, Diuretic, Diaphoretic, Emulcent, Hepatotonic, Hypoglycemic, Laxative, Stimulant
Kalonji	<i>Nigella sativa</i> Linn.	Black cumin	Anti-inflammatory, Antioxidant, Choleric, Diuretic, Diaphoretic, Hypoglycemic, Hypotensive, Laxative , Stimulant
Karelaa	<i>Momordica charantia</i> Linn.	Bitter gourd	Antidiabetic, Hypotensive, Hypoglycaemic, Hypocholesterolemic, Lipolytic, Laxative
Kharnub Shaami	<i>Ceratonia siliqua</i> Linn.	Carofb	Demulcent, Hypocholesterolemic, Hypolipidemic, Hypoglycemic, Resolvent
Khamaan Saghir	<i>Sambucus ebulus</i> Linn.	Dwarf elder	Diaphoretic, Diuretic, Hypotensive, Laxative
Methi	<i>Trigonella foenum- graceum</i> Linn.	Fenugreek	Cardiotonic, Demulcent, Diuretic, Hypocholesterolemic, Hypotriglyceridemic, Hypoglycemic, Hypolipidemic, Hypotensive , Laxative
Mehndi	<i>Lawsonia inermis</i> Linn.	Henna	Anti-inflammatory, Diuretic, Hepatoprotective, Hypotensive
Nakhud	<i>Cicer arietinum</i> Linn.	Chick pea	Anti-hyperlipidemic, Cardioprotective, Diuretic, Hypocholesteremic, Laxative, Lipolytic, Stimulant.
Rajmah	<i>Phaseolus vulgaris</i> Linn.	Kidney Bean	Diaphoretic, Diuretic, Hypotensive, Hypoglycemic, Lipolytic, Lipotropic,

			Resolvent
Saad Kufi	<i>Cyperus rotundus</i> Linn.	Nut Grass	Anti-inflammatory, Carminative, Diuretic, Hypotensive, Hypocholesterolaemic, Hepatoprotective,
Sassafras	<i>Sassafras albidum</i> (Nutt.) Nees.	Ague tree	Demulcent, Diuretic, Diaphoretic, Stimulant
Surkh Mirch	<i>Capsicum frutescens</i> Linn.	Bird Chilli	Anti-inflammatory, Anti-ischemic, Antioxidant, Diaphoretic, Diuretic, Fibrinolytic, Hypoglycemic, Hypocholesterolemic, Hypotriglyceridemic, , Stimulant, Thermogenic
Tamatar	<i>Lycopersicon esculentum</i> Mill.	Tomato	Deobstruent, Hypoglycemic, Laxative
Zaafraan	<i>Crocus sativus</i> Linn.	Saffron	Antioxidant, Demulcent, Diaphoretic, Ecboic, Hypolipidemic, Hypotensive, Hypocholesterolemic, Stimulant
Zard Chob	<i>Curcuma longa</i> Linn.	Turmeric	Anti-inflammatory, Antioxidant, Cardioprotective, Diuretic, Hepatoprotective, Hypocholesterolemic, Hypotriglyceridemic Hypolipidemic, Laxative, Lipolytic, Stimulant
Zaitoon	<i>Olea europaea</i> Linn.	Olive	Cardio protective, Demulcent, Diuretic, Hypocholesterolemic, Hypoglycemic, Hypotensive, Laxative
Zanjabeel	<i>Zingiber officinale</i> Linn.	Ginger	Anti-inflammatory, Diaphoretic, Hypotensive, Hepatoprotective, Hypocholesterolemic, Hypoglycemic, Thermogenic
Zufaa	<i>Hyssopus officinalis</i> Linn.	Hyssop	Anti-inflammatory, Diaphoretic, Diuretic, Stimulant

Nuskha (Prescriptions) for management of obesity mentioned by Unani physicians

- Zeera (*Carum carvi*), Ajwain desi (*Ptychotis ajowan*), Suddab (*Ruta graveolens*), Karafs (*Apium graveolens*), Badyaan (*Foeniculum vulgare*), Marzanjosh khushk (*Oliganum vulgare*), each 1-1 part, Luk (*Coccus lacca*) 2 part, Bora armani (Armenian bole) ¼ part should be powdered and taken in a 4.5 gm dose daily.^[14, 17, 25]
- Decoction of Filfil siyah (*Piper nigrum*) 2 part, Fitrasaliyoon (*Petroselinum crispum*) 2 part, Asaroon (*Asarum europium*) ½ part, Anisoon (*Pimpinella anisum*) ½ part taken daily is helpful for weight loss.^[9,17]
- Ajwain desi (*Ptychotis ajowan*), Badyaan (*Foeniculum vulgare*), Zeerah siyaah (*Carum carvi*) each 1 part, Bora armani (Armenian bole) 1/4 part, Luk (*Coccus lacca*) 2 part should be given in a dose of 4 masha daily.^[13]
- Luk maghsool (*Coccus lacca*) 2 daram, Zeerah siyaah (*Carum carvi*), Ajwain desi (*Ptychotis ajowan*) each 4 daram, should be given in a dose of 1 daram or 1 tola with Sikanjabeen sada.^[26]

- Kaf darya (sea froth) in a powdered form mixed with Sirka (vinegar) should be applied on a body.^[27]
- Sandaroos (*Trachylobium hornemannianum*) in a dose of 2 *masha* or 4 ½ *dang* should be given with Sikanjabeen or water. Sandaroos 1gm along with Sikanjabeen 2 *tola* should be given.^[8,26]
- Tukhme suddab (seeds of *Ruta graveolens*) in a dose of 5gm can be given.
- Ibne Masooya had prescribed Bekh qishaul humar (*Pueraria tuberosa*) 1gm, Bekh khatmi (*Althaea officinalis*) 1gm, Bekh jawasheer (*Ferula galbaniflua*) 1gm to be taken nil orally for reducing weight.
- Dana arand is mixed in 800 gm cow milk and make chapattis with that and take 2 chapattis daily.^[9]
- Itrifal sagheer 1 part, Ayaraj feeqra ¼ parts should be taken once in a week in dose of 10 gm. Other one is Itrifal sagheer 10 ½ gm, Ayaraj feeqra, and Turbud each 3 1/3 gm can be taken once in a week.^[14]

DISCUSSION

Both conventional and Unani medicine consider obesity as a multifactorial disorder with an imbalance between calories ingested and those expended, leading to fat accumulation. The connection between excess body fat and health risks such as type 2 diabetes, hypertension, dyslipidemia and coronary heart disease has been established and provides the incentive for management of obesity. The health benefits of modest weight loss include decreased blood glucose and insulin levels, decreased blood pressure, decreased LDL and triglyceride levels, increased HDL levels, decreased severity of sleep apnoea, improvement in symptoms associated with degenerative joint disease and gynaecologic conditions.^[28] Anti obesity mechanism for herbal plants includes reduction of energy intake, boost in energy expenditure, reduce differentiation and proliferation of preadipocytes, increase fat oxidation, decrease in lipid absorption, lipogenesis and increase in lipolysis, increased water elimination and enhance mood. They can stimulate metabolism, suppress appetite, affect serotonin, or hamper digestion of fat, exhibits some miscellaneous and unspecified actions.^[4,29] Present accessible anti-obesity medications strike the body fat dilemma in different ways.^[19,30] In this review, we can categorize the target effects of herbal medicines in the defined way. Several studies have been proposed that obesity might be an inflammatory disorder and oxidative stress is suggested as a potential inducer of inflammatory status and susceptibility to obesity and related disorders. Research results have shown that antioxidants can reduce levels of glucose,

triglycerides, LDL cholesterol in blood, increase energy expenditure and lowers body weight. They are capable of increasing fat oxidation and inhibiting enzymes related to fat metabolism, including pancreatic lipase, lipoprotein lipase and glycerophosphate dehydrogenase.^[31] Some medicinal plants by inhibiting pancreatic lipase activity prevent the intestinal lipid absorption and the non-absorbed fat gets excreted through oily faeces. Certain bioactive components can increase the metabolic rate which enhances thermogenesis and helps in burning calories and reducing excess body fat. A few of them avert adipocyte differentiation which inhibits adipogenesis and fat cell formation and some are able to enhance lipolysis through inducing β oxidation or noradrenaline secretion in fat cells.^[29] Anti-obesity ingredients may decrease blood lipid levels, increase fibrinolysis, decrease platelet aggregation and lower blood pressure in several clinical studies. Other mechanisms, such as increased hepatic metabolism of glucose or increased insulin secretion, have also been proposed.^[18,19,21] Selected ones have been shown to suppress appetite and induce satiety, allowing for appetite control.^[29] Proposed theories include a reduction in carbohydrate absorption by the mucilaginous fiber and an effect on cholesterol metabolism, cholesterol absorption and bile acid excretion possess lipolytic action and reduce obesity by releasing enhanced concentrations of biogenic amines from nerve terminals of the brain which suppress the appetite centre.^[11] In some the thyroid-stimulating effect may be responsible for weight loss activity.^[19] Above findings support health organization recommendation regarding the regular consumption of vegetables and selected herbs; also suggesting that Unani medicines have great potential in obesity management. Improving knowledge on the use of anti-obesity medicinal preparations and encouraging obese patients to consume them along with an enhanced exercise regimen and a healthy diet should be continued.^[29]

CONCLUSION

Presently, usage of herbs which may be safe and inexpensive is a main focus for the management of obesity. Unani drugs are the competent entity for the development of alternatives to synthetic drugs having fewer side effects. However, before endorsing traditional medicinal plants for treatment there is a need for scientific validation, standardization and safety evaluation of them. It is the need of the time that works of Unani physicians that can have therapeutic effects so as to prevent and combat this disease mentioned in classical literature need to be re-evaluated.

METHODS OF DATA COLLECTION

The databases utilized for obtaining information include books based on Unani classical literature, herbal medicines and journals indexed/available through Science Direct, Pub Med, Scopus, Google scholar databases. The search words were “obesity”, “Unani”, “herbs”, “anti-obesity”, and “co morbidities”.

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