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Therapeutic Potential of Lac (Lak-e-Maghsool) & Sufoof-e-Muhazzil in Obesity Management: A Comprehensive Review of Classical Unani Literature & Contemporary Scientific Evidence

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Abstract: This review evaluates the efficacy of Lak-e-Maghsool in managing Saman-e-Mufrit (Obesity), a growing metabolic disorder characterized by excessive body fat accumulation and an increased risk of chronic diseases. Traditional Unani medicine describes obesity as a derangement of humoral balance and altered metabolic function, for which several natural drugs have been recommended for years. Among these, Lac has gained attention for its possible anti-obesity and lipid-lowering properties. Lak-e-Maghsool, commonly known as Lac, has been historically utilized in various traditional medicine systems for its wide-ranging therapeutic benefits, including its role in managing obesity. Hypolipidemic, anti-inflammatory, antioxidant, and detoxifying effects of Lac have also been discussed in relation to obesity management. In addition, the article evaluates available literature from classical Unani texts, modern pharmacological studies, and recent research publications to understand the efficacy, safety, and therapeutic relevance of Lac-based formulations in obese individuals. In conclusion, the existing literature indicates that Lac may have considerable potential for the management of obesity and related metabolic disturbances. However, further well-designed clinical trials and standardization studies are required to validate its efficacy, determine optimal dosage regimens, and establish its role in contemporary integrative healthcare practices.

Keywords: *Saman-e-Mufrit; Obesity; Lak-e-Maghsool; Hypolipidemic; Anti-inflammatory; Shellac; Safoof-e-Muhazzil; Unani Medicine; Anti-Obesity.*

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I. INTRODUCTION

Obesity may be defined as an abnormal growth of the adipose tissue due to an enlargement of fat cell size (hypertrophic obesity) or an increase in fat cell number (hyperplastic obesity) or a combination of both. Overweight is usually due to obesity, but can arise from other causes such as abnormal muscle development or fluid retention.[23]

In classical text common terms used include Motapa (Obesity), Ferba-i (Fatness), while the technical medical terms are Saman-e-Mufrit.[2]

Modern terminology refers to it simply as Obesity, Corpulency.[2]

Obesity and overweight are the fifth leading risk factor for global deaths.[25]

The most widely used method for gauging obesity is the Body Mass Index (BMI), which is equal to weight/height^2 (in kg/m^2). A BMI of 30 is most commonly used as a threshold for obesity in both men and women.[24]

Fat cells, residing within widely distributed adipose tissue depots, are adapted to store excess energy efficiently as triglycerides and, when needed, to release stored energy as free fatty acids for use at other sites. This physiologic system, orchestrated through endocrine and neural pathways, permits humans to survive starvation for several months. However, in the presence of nutritional abundance and a sedentary lifestyle, and importantly influenced by genetic endowment, this system increases adipose energy stores and produces adverse health consequences.[24]

Excess weight gain usually starts when individuals are aged between 20 and 40, with maximum body weight being achieved in middle age. Weight tends to stabilize when the increased metabolic demands of the body balance the energy intake. Once weight has been gained, it is very unusual to lose it spontaneously before the age of 65.[21]

Defined by the World Health Organization as a BMI of over 30kg/m^2, higher waist-to-hip ratio, indicating central fat distribution. This is more common in males and is associated with greater health risks, which include type 2 diabetes mellitus, IHD, dyslipidaemia, raised BP, osteoarthritis of weight-bearing joints, and cancer (breast and bowel).[25]

It is a frustrating condition for the patient and physician alike. The psychological toll of severe obesity is large. Poor self-image and impaired social relationships are common. Obese individuals are often discriminated against in educational and professional settings, leading to anxiety, anger, and self-doubt.[22]

Obesity is associated with increased mortality. In the Framingham Study, for every 10% rise in relative weight, systolic blood pressure rose 6.5 mm Hg, plasma cholesterol 12 mg/dL, and fasting blood glucose 2 mg/dL. The causes of increased mortality for those 20% or more overweight include coronary heart disease, stroke, diabetes, digestive diseases, and cancer.[22] Fat deposition results from the discrepancy between energy consumption and expenditure.[21]

Severe obesity can lead to serious health issues affecting the heart, liver, and kidneys. It mentions the accumulation of fat around these organs, which can disrupt their normal functioning.[2]

➢ *Health Risk Associated with Obesity*

According to contemporary data[22], obesity triggers multiple systemic disorders.

- Endocrine and metabolic diseases.
- Cardiovascular diseases.
- Musculoskeletal diseases.
- Neurologic diseases.
- Cataract, Gastrointestinal, Biliary, and pancreatic diseases.
- Liver disease.

➢ *Impact of Weight Loss*

A 10kg loss in weight will lead to the following health improvement.[21] DAVIDSON

- *Mortality:*

✓ >20% fall in total mortality
✓ >30% fall in diabetes related deaths
✓ >40% fall in obesity related cancer deaths

- *Blood Pressure:*

✓ A fall of 10 mmHg in systolic blood pressure
✓ A fall of 30 mmHg in diastolic blood pressure

- *Diabetes Mellitus:*

✓ Fall of 50% in fasting glucose

- *Lipids:*

✓ A fall of 10% in total cholesterol
✓ A fall in 15% in low-density lipoprotein cholesterol
✓ A fall of 30% in triglycerides
✓ An increase of 8% in high-density lipoprotein

II. UNANI PERSPECTIVE AND ETIOLOGY

Traditional Unani medicine defines obesity as a condition where excessive fat accumulates in the body, specifically in certain parts such as the stomach (abdomen), buttocks, back, neck, and shoulders. It explains that when a person consumes more starchy, sugary, and fatty foods than required, the body converts these excess nutrients into fat. This fat settles under the skin and around internal organs like the heart and kidneys.[2]

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The foods we eat contain starchy (starch-rich) and fatty (oily) components, which reach the body and turn into fat after digestion. When needed, these fats are burned by the action of oxygen reaching the body through respiration, creating physical strength. A portion of this fat is stored under the skin, especially in structures of the face, neck, back, shoulders, and in women, under the buttocks and breasts in the form of thick fat. Some is also stored around the heart, kidneys, and liver as a thin layer of fat. If starchy and fatty foods are eaten in excess of normal requirements, fat begins to accumulate in the aforementioned parts of the body. Or, if these foods are eaten in normal or even smaller amounts, but the fat is not properly absorbed or utilized by the body due to some disease or weakness, obesity occurs in both cases.[2]

➢ *Causes of Obesity (Asbab-e-Saman-e-Mufrit)*

- Nishasta-dar asshya ka kasrat se istemaal [excessive consumption of starchy foods]
- Varzish ki kami [lack of exercise /physical activity]
- Ghudood-e-nuk [pituitary gland disorder]
- Kulah-e-gurda [Adrenal gland disorder]
- Khaseeteen ka kharabee [testicular disorder]
- Khusiyat-ur-reham [ovarian disorder]
- Sharab peena [alcohol consumption]
- Aesh wo Ishrat ki zindaji basar karna [living a luxurious and sedentary lifestyle]
- Gurdo ki purani sojish [chronic inflammation of kidneys]
- Mithi cheezai zyada khana [excessive consumption of sweet foods]
- Moroosi asraat [hereditary/genetic factors]
- Ayam-e-yass [Menopause]
- Zyada khana se [Excessive eating]
- Bhens ka doodh zyada peeny se [Excessive consumption of buffalo milk]
- Kaheli aur susti [Laziness and lethargy]
- Chikni cheezon ka istemaal[2]

➢ *Types of Obesity*

Traditional literature classifies the condition into two major types [2 JAME UL HIKMAT]

- Exogenous: caused by external factors, primarily excessive food intake.
- Endogenous: caused by internal systemic faults, even when food consumption is normal.

III. DRUG PROFILE

➢ *Luk-e-Maghsool(LAC)*

Shellac consists of a resinous substance prepared from a secretion that encrusts the bodies of a scale insect, *Tachardia lacca R.Blanvhard,* which lives on the juices of the stems of various plants. The resinous crust is broken from the twigs, washed with water to remove the red colouring matter, known as “lac dye”, and dried, thus forming “seed lac”.[19]

➢ *Physio-Chemical and Therapeutic Properties*

- Botanical name -Lac
- Hindi name -lakh / laksha
- Urdu name -lakhdana
- Arabic name -luk
- Bengali name -gala
- Farsi -laak
- Source -animal origin
- Shelf life -5 years
- Mizaj -garm 2 / khushk 3
- Muzir (adverse effect) -tihal (spleen)
- Musleh(corrective) -mastagi(mastic gum)
- Badal (substitute) -tabasheer(bamboo silica}
- Miqdar e khorak (dosage) -1 to 3 grams.

The effect of lac on rats fed with a high-fat diet (HFD) was investigated through the determination of the changes in body weight and serum levels of leptin. In addition, the effect of lac on total cholesterol, triglyceride (TG), low-density lipoprotein-cholesterol (LDL-C), and high-density lipoprotein-cholesterol (HDL-C) was studied. Male Wistar rats (170-220 g) were divided into eight groups: a control group with a normal diet, the HFD group received an HFD, and the experimental groups received the HFD containing 0.1, 0.2, and 0.4% (w/w) of seedlac or 0.1, 0.2, and 0.4% (w/w) of shellac for 12 weeks. The body weight of each rat was measured once a week. At the end of the experiment, animals were sacrificed, and serum concentrations of cholesterol, TG, low-density lipoprotein-cholesterol, high-density lipoprotein-cholesterol, and leptin were determined.[28]

The study showed that seedlac and shellac significantly prevented the increase in body weight, and the levels of serum leptin were decreased in treated groups compared with the HFD group. Also, shellac decreased TG level, and both shellac and seedlac exerted a significant increase in HDL-C concentration. Lac had weight-reducing properties and could be a promising alternative for controlling obesity.

➢ *Signs and Symptoms for Clinical Application*

Obesity becomes clearly visible as the patient becomes unusually heavy, presenting with a prominent protruding abdomen (pot belly). Increased fat in the chest and abdominal areas can put pressure on internal organs, leading to difficulty breathing (shortness of breath) and a rapid heartbeat (palpitations) during physical activity. Despite weak digestion, an excessive feeling of hunger may persist.[2]

IV. LITERATURE REVIEW

The therapeutic value of Lak-e-Maghsool and its classic compound formulations has been extensively documented across classical and contemporary medical literature:

- Hakim Ibn-Sina (The Canon of Medicine, Book II): Mentions that Lac is one of the most effective weight-reducing natural drugs.[1]
- Shifa-ul-Mulk (Jame-ul-Hikmat): Documents the detailed systemic effects and etiologies of fat accumulation managed by Lac[2]

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- Dr. Mohd Imran Osmani (Tanqih-ul-Mufradat): Mentions the administration of Lak-e-Maghsool as a powder (Safoof) with vinegar to reduce body weight effectively.[3]
- All India Unani Tibbi Conference (Qarabadeen Majeedi): States that the compound formulation Safoof Muhazzil helps in safely and slowly reducing body weight when consumed consistently.[4]
- Dr. K. M. Nadkarni (Indian Materia Medica Volume 2): Discusses the action of Lac in Unani as an excellent therapeutic tonic for reducing fat in adipose individuals.[5]
- Hakeem Shakeeb Ahmed (Iftekhar-ul-Mufradat Part II): Validates that the use of Lak-e-Maghsool powder with vinegar (Sirka) or Arq-e-Zeera helps reduce body weight. It outlines its bioactivity as hepatoprotective, anti-obesity, antiinflammatory, and anti-infective.[6]
- Hakeem Abdul Hameed (Hamdard Matab): Describes the clinical application of Majoon-e-Muhazzil and Sufoof-e-Muhazzil with water and Arq-e-Zeera, highlighting Lak-e-Maghsool as the primary active ingredient.[7]
- Abubakar bin Mohd Zakariya Razi (Kitab al Mansoori): Mentions Lac as a main constituent of the Sufoof-e-Muhazzil formulation designed to combat morbid obesity.[8]
- Hakeem Irfan Ilahi Farooqi (Qarabadeen Hamdard): Prescribes Safoof-eMuhazzil containing Lac for steady lipid reduction in obese patients.[9]
- Makhzan-ul-Mufradat wa Murakkabat: Details the core function of Lak-eMaghsool in reducing weight and regulating metabolic parameters.[10]
- Mohd Abdul Hakeem Lakhnawi (Mufradat-e-Azeezi): States that Lak-e-Khalis possesses potent Muhazzil (weight-reducing) properties, clarifying its linguistic Arabic roots.[11]
- Hakeem Mohd Abdul Hakeem (Bustaan-ul-Mufradat): Confirms that Lac successfully reduces and maintains healthy body weight.[12]
- Shams-ul-Atibba Hakeem Dr. Ghulam Jilani (Kitab-ul-Murakabat): Confirms that Safoof-e-Muhazzil depends significantly on Lak-e-Maghsool to achieve its weight reduction properties.[13]
- Shams-ul-Atibba Dr. Ghulam Jilani (Makhzan-e-Hikmat Jild 2): Highlights the inclusion of Lak-e-Maghsool in metabolic compounds targeting fat dissolution.[14]
- Hakeem Ram Labhaya (Delhi ke Muntaqib Murakkabat): Asserts that the consistent prescription of Safoof-e-Muhazzil safely treats generalized obesity.[15]
- Prof. Hakeem Syed Zil-ur-Rehman (Kitab-ul-Murakkabat): Documents that Safoof-e-Muhazzil reduces obesity, making the body well-shaped, slim, and active.[16]
- The Unani Pharmacopoeia of India (Part II, Vol 3): Formally defines the pharmacopoeial action of Safoof-e-Muhazzil as an anti-obesity formulation to be taken orally alongside Arq-e-Zeera.[17]
- Makhzan-ul-Murakkabat: Outlines the synergistic relationship between Sufoofe-Muhazzil and pure Lac in accelerating adipose tissue breakdown.[18]
- Makhzan-ul-Mufradat al-Maroof Khawas-ul-Advia: States that Lac exerts a highly robust and targeted therapeutic action against obesity.[20]
- Pharmacophore International Research Journal: Reviews the clinical status of Lac as an under-investigated yet highly potent anti-obesity natural drug.[26]
- American Journal of Pharmtech Research (2020): A comprehensive literature review confirming the ancient and historical safety parameters of Luk-e-Maghsool across Unani and Ayurvedic healthcare paradigms.[27]

V. MATERIALS & METHODS

This review was carried out by collecting comprehensive data from both classical Unani literature and modern scientific sources. Insights regarding obesity (Saman-e-Mufrit), Lak-eMaghsool (Lac), and Sufoof-e-Muhazzil were extracted systematically from authoritative Unani manuscripts, national pharmacopoeias, peer-reviewed research articles, and indexed medical textbooks.

Relevant literature searches were carried out across digital medical databases including PubMed, Google Scholar, and ScienceDirect. The primary search matrices deployed specific keywords: obesity, Lak-e-Maghsool, Lac, Laccifer lacca, anti-obesity activity, hypolipidemic activity, and Unani medicine. Published clinical trials, in-vitro pharmacological profiles, review papers, and traditional pharmacopoeias were meticulously evaluated, cross-referenced, and organized to extract clear consensus data regarding the therapeutic efficacy of Lac.

VI. DISCUSSIONS

Obesity (Saman-e-Mufrit) is recognized in both modern medicine and Unani literature as a complex metabolic disorder resulting from a chronic imbalance in diet, lifestyle, and body metabolism. This review highlights the clinical potential of Lak-e-Maghsool (Lac) and its compound formulation Safoof-e-Muhazzil through a dual analysis of classical Greco-Arabic texts and contemporary pharmacological data.

Classical Unani scholars such as Ibn Sina and Zakariya Razi have consistently defined Lac as an exceptional Muhazzil (weight-reducing) agent. The recurrent inclusion of Lac across authoritative pharmacopoeias and historical Qarabadeen registers underscores its long-standing safety and utility. Modern pharmacological studies provide direct biochemical support for these traditional assertions. Experimental models indicate that Lac exhibits profound hypolipidemic, antioxidant, anti-inflammatory, hepatoprotective, and detoxifying pathways. These combined actions directly reduce adipose tissue accumulation, improve systemic lipid profiles, and help downregulate obesity-linked comorbidities like type 2 diabetes, ischemic heart disease, and nonalcoholic fatty liver disease. Specifically, its hypolipidemic activity helps optimize serum cholesterol, lower triglycerides, and reduce low-density lipoproteins (LDL) while preserving high-density lipoproteins (HDL).

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From the Unani humoral perspective, obesity is fundamentally treated as a disorder stemming from an excess accumulation of Balgham (phlegmatic humour) and a subsequent decline in Hararat-e-Ghariziya (innate metabolic heat), culminating in a sluggish metabolic rate. Lak-eMaghsool acts effectively by correcting this humoral imbalance, stimulating digestion, and clearing morbid matter via systemic elimination channels. Its traditional administration alongside adjuvants like Sirka (vinegar) or Arq-e-Zeera serves a clear scientific purpose, as these vehicles act synergistically to enhance metabolic speed and fat emulsification. However, a major challenge highlighted during this review is that the majority of modern data concerning Lac is limited to literature analyses or animal experimental models. Large-scale, double-blind randomized controlled human clinical trials remain scarce. Furthermore, variations in historical purification methods (Maghsool processing) and dosage models make precise standardization difficult. Consequently, there is an urgent need for rigorous, contemporary clinical designs to fully map out its exact molecular mechanisms, human pharmacokinetics, and long-term safety profile.

VII. CONCLUSION

In classical Unani literature, Lak-e-Maghsool (Lac) has been widely described as an effective Muhazzil drug for the management of Saman-e-Mufrit (obesity). Traditional formulations containing Lac have been used for centuries to reduce excessive body weight and improve metabolic health. Modern pharmacological studies further support its potential anti-obesity role through hypolipidemic, antioxidant, anti-inflammatory, and hepatoprotective activities.

Despite encouraging traditional and experimental evidence, adequate scientific validation through well-designed clinical trials is still required. More research should be carried out on the standardization of formulations, identification of active constituents, dosage optimization, and evaluation of long-term safety and efficacy. Integrating traditional Unani knowledge with modern scientific approaches will further help establish Lak-e-Maghsool as an effective and safe option in contemporary obesity management.

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