

Reducing Obesity with Ayurvedic Diet [†]

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Abstract: The process of making gruel with puffed *Oryza sativa* and seeds of *Sesamum indicum* can enhance the functional components in the food. Ayurveda says a sustainable way to lead a healthy life, how an unhealthy food and deed can cause disease and necessitate medications. The gruel with puffed rice and sesame seed is a healthy and sustainable diet which has high fiber content and low glucose level. The diet is enriched with hydrolyzed prothocyanidins and minerals like potassium, magnesium, manganese, phosphorous, beta- carotene which is directly related to anti-obesity properties.

Keywords: obesity; ayurveda; *Sesamum indicum*; *Oryza sativa*; roasting process; gruel

1. Introduction

Obesity can hinder the quality of life by impairing health of the people and WHO counted it as a global pandemic since 2016. It has been the reason for mortality, ageing and health complications conjoined with acute and chronic diseases. The mechanism of obesity requires studies worldwide as it is also a reason for the increasing mortality rate of Covid-19 pandemic. Studies on centenarians have shown that geographic differences in eating habits is a determiner in longevity and health span [1–3].

2. Materials and Methods

The data reviewed from Ayurvedic classics and published articles from electronic database like PubMed, Scopus, Google Scholar with bullion operators like AND, OR and filters like relevant, free FULL TEXT and selected twelve papers for the study.

3. Results and Discussion

3.1. Preparation of Gruel with Sesame and Puffed *Oryza sativa*

The preparation of fried cereal in water, gives lightness to the body. Its daily usage for a desired time can correct electrolytic imbalance, clear the channels in obese body which improves the health status. Laja, parched or puffed rice, *Oryza sativa* also kindles digestion and corrects electrolytic imbalance, ensures erythropoietic action of the body and reduces obesity. The properties of Tila, *Sesamum indicum* L. seeds and oil have similar action. There are five varieties like black, white, red, wild, and small among which black is considered as best one [4]. According to Ayurveda the qualities of active compounds in *Sesamum* are penetration to deep tissues, ease of absorption and assimilation. It can also act as germicide. With appropriate combination of additives, it can make obese to lean and lean to obese [5]. The medicine is administered orally in patients aged between 18- and 50-years keeping weight and BMI as objective criteria, and age from 18 years and 60 years are excluded. In an open label single group interventional clinical study with 15

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patients on the effect of sesame in reducing obesity, 33.3% patients showed major improvement whereas 66.7% patients showed moderate improvement in obesity [6]. This shows that the bioavailability and anti-obesity action of the gruel is high.

Diet and Obesity

A high calorie diet lacks RDA specifications, which results in insufficiency of fiber content, essential nutrients like Vitamin A, Vitamin C, Vitamin E and essential minerals like calcium, potassium triggering health problems [3]. Obesity is a metabolic syndrome associated with conditions like dyslipidemia, hypertension, cardiovascular, changes in metabolism of glucose and cancer. Obesity has become life threatening with deriving factors like changes in adipose tissue and presence of leptin, adiponectin, and tumor-necrosis factor alpha (TNF- α) [7]. The reduction glucose uptake causes hyperglycemia, insulin resistance. Based on the diet, fatty acids sense proteins and carbohydrates in obese body [8]. In the Mediterranean diet pyramid grains and oil seeds occupy the first and second position, respectively in retarding ageing [7].

Cereals are considered as energy giving and protective foods. In case of extraction of edible Irish sea-weed *Homonanthalia elongata*, drying followed by boiling gave promising results on its phytochemicals because of its total phenolic content; which was increased by 174% [8]. Sesame is well known for its anti-obesity and anti-ageing links. It is composed of proteins, oils, and lignans. The nutritional values are enhanced by the phenolics, phytates, phytosterols, short chain peptides and PUFA [9]. Anti-ageing property of Sesamin has been investigated. pinoresinol is used in lowering sugar in diabetic patients [11].

The phytochemical as well as biological activity of black variety is more when compared to the white one. The anti-proliferative activity in the black one is inferred as because of both lignin and non-lignin components of phenolics. Black sesame seed variety exhibited high content of free and bounded phenolics [10]. It lowers the level of glucose and cholesterol and thereby prevents the complications of emergency in diseases of hormonal, circulatory, metabolic disorders [11]. In silico studies showed that semi synthetic lignans could inhibit three α -glucosidases and can bind with most potent derivatives to intestinal maltase [11]. Seeds are rich in sulfur amino acids, minerals like phosphorous, calcium, zinc. The anti-oxidative, hypo-lipidemic, anti-arthritis, anti-thrombotic, anti-inflammatory and vasodilatory action of its functional contents are reviewed [11]. Sesamol is effective in osteoporosis by working against cartilage dehydration [11]. Absorption of vitamin E, the Phyto-estrogen in both genders can alleviate obesity and enhance fertility

The water-soluble tannins and proanthocyanidins in *Oryza sativa*, is directly involved in obesity [12]. On studies of sand roasting *Oryza sativa* which is the traditional way of making puffed rice or Laja can enrich the nutritive value of it with fine texture, aroma, and taste and in turn increases the essential trace elements like potassium, magnesium, manganese and phosphorous. The depletion of poly saccharide bonds in rice was evaluated by in-vitro by the structural damage of amylopectin of puffed rice. This process can destroy seed microflora and can act as a pre biotic nutrient food [13].

3.2. Anti-Obesity Is Anti-Ageing

Studies related to Oktaavian, Mediterranean, and in Sardinians shows how a simple and sustainable diet saves lives. Natural and sustainable diet from different geographical regions could be evaluated for the sake of health span and longevity. The person-oriented and season-oriented rules and regulations in Ayurveda can be addressed against obesity and its attributes for the sustainable health be evaluated. Gruels are advised for those who have weak digestive fire, exhausted with severe water loss or those unable to gain nutrients due to expulsion of by-products and wastes from the body. Dietary restrictions are mainly food dilution, fasting in intermittent model, avoiding or restricting of specific nutrients.

3.3.

A review on functional food components showed that at required levels and bioavailability it gives best results. In terms of nutrition, the roasting process enhances the carbohydrate and protein digestibility, it can increase β -glucan extractability, levels of dietary fiber, minerals, and antioxidants and reduces the inherent anti-nutritional levels in Puffed Rice [14].

4.

The effect good and bad gut microbiota in obese patients were reviewed and it was found that promising results can be obtained by altering the gut microbiota through varied diet patterns [14]. The synergistic effect of Ayurvedic gruel prepared with puffed rice and Sesame can produce glucose control by remodeling the bad gut microbiota of obese to good microbiota.

Institutional Review Board Statement:**Informed Consent Statement:****Data Availability Statement:**

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