

“ROLE OF MILLETS (SHRIDHANYAM) IN PREVENTION AND MANAGEMENT OF OBESITY: A REVIEW STUDY”

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ABSTRACT:

Objective: Obesity rates are rising high in the world and is one of the cause of chronic inflammatory disorders. There is a serious need to make changes towards life style. Healthy eating is one of the important behavior modification required to reduce weight. Millets are nutritious, easily digestible, gluten free whole grains, good sources of proteins, fibers, iron, antioxidant also have antiinflammatory effects making them valuable for managing obesity.

Methods: Ayurvedic samhitas, Modern literature, Journals, and review articles have been analysed for the study.

Result: Millets with the low glycemic index (GI) regulates fat percentage in the body. This promotes weight loss by reduce adipose tissue in the body. It contain dietary fibers which takes longer time to digest thus it prolongs satiety and thereby reducing overall calorie intake and promote weight loss. Millets also have high protein, low fat this properties regulate blood sugar levels, reduce appetite, maintain lean muscle mass and reduce overall calorie intake, thus it helps in management and prevention of obesity.

Conclusion: Obesity is a disease that can be caused by combination of factors, to manage obesity controlled and balanced diet is most important. Millets due to their high nutritive value can play significant role in prevention and management of obesity.

KEY WORDS:- Obesity, Millets, Shridhanyam

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INTRODUCTION

Out of every four Indians one is now obese, According to National Family Health Survey5 (NFHS-5) released in 2022. At a national level, obesity has increased from 21 percent to 24 percent among women and from 19 percent to 23 percent among men. [1]Obesity is spreading fastly. Obesity leads to the deposition of fat cells in the body. [2] According to WHO, excess body fat raised the risk of several non-communicable and progressive diseases including 13 types of cancer, type-2 diabetes, heart problems and lung conditions. Obesity causes low-grade inflammation, oxidative stress, altered adipose tissue secretome, and dysbiosis of beneficial gut microflora, which, in turn, contribute to the development of multiple chronic abnormalities such as atherosclerosis, diabetes and certain forms of cancers.[3-5] There is a serious need to make behaviour changes towards lifestyle. Healthy eating is one of the important behaviour modifications required to reduce weight. [6] Millets are rich in proteins, fibers, minerals, flavonoids, polyphenols, Ferulic acid. ferulic acid is a potent antioxidant. It can inhibit the expression of cyclooxygenase-2, an enzyme involved in inflammatory responses. Obesity causes inflammation and antioxidants act as powerful anti-inflammatory agents. Thus using millets as part of a regular diet might help to reduce weight [7-8] Because of their high fiber content, millets are regarded as a healthy food option for those who suffer from obesity. In order to increase satiety, which in turn helps control weight, fiber is a crucial ingredient for those who suffer from obesity. Some types of millets have up to 10 grams of fiber per 100 grams, making them an excellent source of dietary fiber. [9] While all millets are good for losing weight, finger millet, pearl millet, and foxtail millet etc. are some of the healthiest varieties. These millets are a great option for anyone trying to lose weight because of their high protein, high fiber content, and low glycemic index. [10]

AIM AND OBJECTIVES

To Study the role of millet in prevention and management of obesity.

MATERIALS AND METHODS

To Study the role of millet in prevention and management of obesity, the literature search was performed using the following electronic database: Google, Google Scholar, PubMed, Science Direct, Different Research Journals using keywords like millet, Articles containing role of millet on obesity were reviewed, screened and used for deriving conclusion in this article.

DISCUSSION

The following findings are observed after review of different Research articles and electronic database.

Common properties of millets according to Ayurveda:

These are Shita (strong), Svadu (sweet) and Svadu Vipaka (sweet after digestion). They are called Vatavardhak, Alpha Varchasa, Brimhana, and Shukrala. [11]

The general gunas and karmas (properties and effects) of millet are as follows. [12,13]

Kodo millet (*Paspalum scrobiculatum*)

Proteins, fibre, iron, and antioxidants are abundant in kodo millet. Eight percent of the Kodo millet grain is made up of proteins. It has a lot of fiber as well. For every 100g of grain, it contains 9% more fiber than wheat (1.2%) and rice (0.2%). 2.6% of Kodo millet is made up of minerals. Calcium, iron, potassium, magnesium, and zinc are a few of these.

Lecithin, which is abundant in kodo millet, is beneficial to the nervous system. Vitamins including niacin, vitamin B6, and folic acid are abundant in it. [14]

Little millet (*Panicum sumatrense*)

The bioavailability of the millet's phenolic components is enhanced by the popped little millet seed and popped millet flour. It has a lot of iron in it as well. [14]

Foxtail millet (*Setaria italica*)

Phenolic substances such as ferulic acid, caffeic acid, p-coumaric acid, syringic acid, and chlorogenic acid can be found in good amounts in foxtail millet.

Carotenoids such as zeaxanthin and xanthophylls are also present in foxtail millet.

These foxtail millet phytochemicals have the ability to scavenge free radicals. [14]

Barnyard millet (*Echinochloa crusgalli* (L.) P. Beauvois)

Rasa	Kashaya-Madhura
Veerya	Sheeta
Vipaka	Katu
Guna	Laghu Ruksha
Karma	Lekhana, Vrishya, Kledashoshana, Baddhamalakara
Effect on Tridosha and Dhatu	Kapha-Pittahara, Vatala, Rakta Shaamaka

notable source of readily digested proteins is barnyard millet.

Both soluble and insoluble fibers are present in good levels in barnyard millet. Barnyard millet has a low and slowly digested carbohydrate content. High quantities of amylase retrogradation, which forms resistant starch and aids in blood sugar regulation, are seen in barnyard millet. [14]

Ragi or Finger Millet

Ragi is incredibly high in iron, a trace mineral that the body needs to make red blood cells that contain hemoglobin. It also has the greatest potassium and calcium contents. Ragi's high fiber content means that it takes longer for the stomach to break down, keeping you satisfied for longer. Research indicates that ragi, which does not elevate blood sugar, may also be advantageous for those with diabetes. Owing to its high level of amino acids, children could also be fed this grain to aid with brain development.^[15]

Jowar or Sorghum

Numerous minerals, including as magnesium, vitamin B, and antioxidants like tannins, phenolic acids, and flavonoids, are abundant in sorghum. Magnesium supports heart and bone health, and B vitamins are essential for increasing metabolism and enhancing the condition of skin and hair. Moreover, 96 grams of sorghum contains about 20% of the daily required fiber intake. Fiber helps with weight management, blood sugar regulation, and gut health.^[15]

Bajra or Pearl Millet

Pearl millet, also known as bajra, is a superfood that is rich in calcium, magnesium, iron, protein, and fiber. This meal is incredibly low in calories and one of the greatest options for grains if you want to lose weight. Its high fiber content prolongs your feeling of fullness without adding extra calories to your usual intake. Brahma consumption on a daily basis can also lower the incidence of asthma, various cancers, Type 2 Diabetes, and cholesterol.^[15]

Rajgira or Amaranth

A long-used grain that has become very popular recently is amaranth. The food grain has high iron, magnesium, phosphorus, fiber, and protein content. With just one meal, amaranth can meet your daily requirements for manganese thanks to its high manganese content. This trace mineral guards against some neurological disorders and enhances brain function. Its protein and fiber composition support both digestive health and muscle growth. Actually, quinoa is less nutrient-dense than amaranth.^[15]

ROLE OF MILLETS IN WEIGHT LOSS:

Low Glycemic Index

Milletts are low in GI (glycemic index). This implies that millets help you feel fuller for longer by releasing glucose into the bloodstream gradually. Sugar and refined grains are examples of high GI foods that cause a sharp surge in blood sugar. You have a sharp decline in energy as a result, which makes you feel hungry shortly after eating. On the other hand, low GI foods, like millet, keep blood sugar levels steady, which can reduce appetite and promote weight loss.^[16]

High Fibre Content

Dietary fiber is essential for controlling weight, and millets are a great source of it. Foods

high in fiber take longer to digest, which prolongs feelings of fullness and lowers total caloric intake. Furthermore, studies indicate that dietary fiber controls hunger and increases satiety, which helps people avoid overindulging and, eventually, lose weight.

Both soluble and insoluble fiber found in millets contribute to gastrointestinal health by lowering inflammation and regulating bowel movements.^[16]

Low in Fat

Millets are excellent choice for losing weight because they are low in fat. Unlike refined grains, which are often high in fat and calories, millets provide essential nutrients without adding too many calories to your diet. Some [studies](#) also suggest that a weight-loss diet can benefit from incorporating low-fat foods.^[16]

Rich in Essential Nutrients

Millets are a good source of iron, magnesium, phosphorus, potassium, selenium, and other important vitamins and minerals. These nutrients promote a number of body processes, such as energy production, weight loss, and metabolism.^[16]

CONCLUSION

The secret to long-term weight loss is changing one's lifestyle.^[17] One of the lifestyle changes for weight loss is eating a healthy diet. Every person's primary source of carbs on a meal plate is grains, which are staple foods. The majority of the meal plate is adjusted and there is a good probability of consuming an adequate amount of micronutrients when the staples are derived from wholegrains. Whole grains make up millets. Minerals, flavonoids, polyphenols, and carotenoids are abundant in them. They include a good amount of digestible fiber and a low glycemic index. It is a prebiotic fiber. Additionally, millets aid in reversing intestinal dysbiosis^[18]. Even though they include antinutrient elements like tannins and phytates, appropriate cooking techniques including. Because of their high fiber content, low fat content, low glycemic index, and abundance of vital nutrients, millets are used for weight control. Rajgira, or amaranth, Ragi, or finger millet, Jowar, or sorghum, Bajra, or pearl millet, Little, Foxtail, Barnyard, and Kodo millet are among the millets that work particularly well for weight.^[19,20]

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