

Millets As a Novel Solution for PCOS Management: A Review

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Abstract

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women of reproductive age, while the conventional management of PCOS often involves medication and lifestyle modifications, recent research has shown promising results with the incorporation of millets into the diet. Millets, a group of small-seeded, ancient grains, have gained attention for their potential to ameliorate PCOS symptoms and improve overall health. This review article aims to explore the nutritional composition of millets, their impact on PCOS-related parameters, and their potential role as a novel dietary intervention in PCOS management.

Introduction

Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder affecting women, characterized by hormonal imbalances and ovarian cysts. It has a global prevalence of 6-20%. Managing PCOS is challenging due to its multifactorial nature and diverse symptoms [1, 2]. In managing PCOS, diet is essential since it affects insulin resistance, hormonal balance, and weight. In order to address individual variances and enhance treatment effects, investigating alternate food options is crucial [3, 4]. Sorghum, pearl millet, and other different grains that are known historically as traditional staple foods in various civilizations are referred to as millets [5, 6].

Nutritional Composition of Millets

Millets, including foxtail (*Setaria italic*), finger (*Eleusine coracana*), pearl (*Pennisetum glaucum*), barnyard (*Echinochloa frumentacea*), and kodo millet (*Paspalum scrobiculatum*), are rich sources of essential nutrients. They offer high dietary fiber, protein, vitamins, minerals, and antioxidants, making them valuable for managing PCOS-related metabolic disturbances [7]. Foxtail millet is a source of dietary fiber, protein, iron, and magnesium. Finger millet includes necessary amino acids, protein, and calcium [8]. Pearl millet is a good source of phosphorus, iron, zinc, and B vitamins [7]. Barnyard millet has significant dietary fiber and iron content [9]. Along with phosphorus and iron, Kodo millet also offers important amino acids such as lysine [7]. Millets high fiber content helps with PCOS therapy by reducing insulin resistance and enhancing glycemic control [10]. The protein content helps with weight management and muscle growth, addressing PCOS related difficulties with obesity [11]. Additionally, oxidative stress, inflammation, and dyslipidemia are all combined by the vitamins, minerals, and antioxidants in PCOS patients [7].

Role of Millets in PCOS Management

Studies and clinical trials have investigated the impact of millet consumption on PCOS symptoms and indicators, pointing to potential advantages. Millets have been found to improve glucose metabolism, lower insulin resistance, and regulate insulin levels in PCOS patients [12, 13]. Additionally, millets have a favorable effect on lipid profiles by lowering levels of total cholesterol and triglycerides [14]. They also have anti-inflammatory characteristics, which are shown by lower levels of inflammatory markers including IL-6 and TNF- α [12]. Furthermore, the abundance of antioxidants in them reduces oxidative stress, which is a prevalent feature in PCOS [15]. These results highlight the value of millets as a dietary supplement for treating metabolic abnormalities associated with PCOS.

Gut Microbiota and Millet Consumption

As PCOS develops and is managed, gut health is becoming increasingly understood to be important. Dysbiosis, an imbalance in the gut micro biome, may play a role in the aetiology of PCOS, according to recent studies. Millets may help to support a healthy gut flora and favorably affect the metabolic pathways connected to PCOS because of their prebiotic qualities [16]. As prebiotics that specifically promote the growth and activity of good gut bacteria, millets contain dietary fibers, resistant starches, and non-starch polysaccharides [17]. These prebiotics, particularly those found in foxtail and finger millet; promote the development of the bacteria Bifidobacterium and Lactobacillus, which have been related to enhanced lipid profiles, improved glucose metabolism, and insulin sensitivity [18, 19]. By lowering inflammation, oxidative stress, and insulin resistance as well as potentially easing hormonal imbalances and metabolic disturbances, a balanced gut microbiota, supported by millet diet, may affect PCOS [20]. Therefore, promoting gut health through the consumption of millets could be a feasible strategy for treating PCOS.

Millets as Part of a Balanced Diet

Millets can be added to the diet of PCOS patients in a practical way to guarantee a balanced and diversified approach. In classic meals like upma, pongal, or khichdi, millets can be used in place of refined grains. Make chapatis or pancakes using millet flour, and add millet grains for texture and flavor to soups or salads [21]. Combine millets with protein sources like lentils, beans, or lean meats to create a balanced diet plan. You should also consume a variety of vegetables and fruits to receive the vitamins and minerals your body needs [13]. It is essential to individualize care, taking into account things like dietary choices, cultural customs, and any underlying medical issues [22]. While incorporating millets into your diet, stress the need of quantity control and preserving overall dietary quality.

Potential Challenges and Considerations

Millet consumption may raise concerns due to its anti-nutrient content, impacting mineral absorption [23]. Gluten sensitivity is also a consideration [17]. Existing research on millets and PCOS is limited by small sample sizes and short durations [13]. Further investigations with larger, long-term trials are needed to establish millets efficacy in PCOS management.

Conclusion

Millets show promise as a novel dietary intervention in PCOS management, with potential benefits in regulating insulin, improving glucose metabolism, and mitigating metabolic disturbances. However,

further research is crucial to establish their role fully and optimize their inclusion in dietary guidelines. Healthcare professionals, researchers, and policymakers must consider millets as a viable option for the comprehensive management of PCOS, aiming to enhance patient outcomes and well-being.

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