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Evaluation of nutritive profile of raw and processed indian barnyard millet (*Echinochloa esculenta*): An underutilised food crop to strengthen the agricultural value chain and healthier diet

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Abstract

This study investigated the possibility of using suitably processed under-utilised barnyard millet (*Echinochloa esculenta*) as a healthier alternative to rice or wheat. With its abundance of vital nutrients, including dietary fiber, protein, and carbs, barnyard millet widely available in India is particularly advantage for people with diabetes or heart disease. The aim of the project is to determine how the various traditional processing methods (boiling, steaming and dry heating) affect the nutritional value of barnyard millet. The three processing techniques were applied to the millet, which was then milled into a powder and their nutritional make-up was examined. Carbohydrates, protein, fiber, fat, total ash and starch contents were measured in raw and processed millets. The highest carbohydrate levels were found in raw millet (74 g/100 g), however nutrient leaching and breakdown during boiling and steaming resulted in a decrease. Moderate carbohydrate retention was the outcome of dry heating (86 g/100 g). The maximum protein concentration was found in dry-heated millet (23 g/100 g). Steamed millet had the maximum fiber content (17 g/100 g), but boiling and dry heating caused some fiber loss. The most prevalent components in the raw millet were fat (18 g/100 g) and starch (64 g/100 g), but these were diminished during processing. The most efficient processing method for maintaining the nutritional value of millet was steaming, which also turned out to be the greatest way to retain fibers. The study showed that adding processed barnyard millet to day-to-day foods significantly increase the fiber content, making it a healthier substitute for regular grains like rice or wheat. This study highlighted how the traditional processing methods influence the nutritional value of barnyard millet and improve health benefits of conventional recipes and encourage better eating habits to address enhancing general health. Encouraging such underutilised food crops will strengthen the agricultural value chain for healthier diets in the tropical countries like India.

Keywords: Barnyard millet, *Echinochloa esculenta*, indian minor millet, Nutritional profile, Processing methods, Underutilised food crop