



Applicant Information

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Abstract Details

Title:

Evaluation of Antidiabetic Properties of Selected Cereals: Millet (Eleusine Coracana) Maize (Zea Mays) And Sorghum (Sorghum Bicolor L.)

Category:

Non-communicable diseases including mental health

Authors:

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Objectives:

Diabetes mellitus is a prevalent chronic disorder that burdens healthcare systems and affects individuals' quality of life. Cereals and grains, widely consumed worldwide, can be enhanced through sprouting, potentially improving their nutritional quality and glycemic control. Aim: This study evaluated the proximate parameters and antidiabetic properties of sprouted cereals, specifically millet, maize, and sorghum.

Method:

In vitro simulation and in vivo techniques were deployed to evaluated nutritional and antidiabetic properties of the samples. Three cereals (sorghum, millet, maize) were germinated and processed into powders. Subsequently, polyphenol-rich crude ethanol extracts of sprouted and unsprouted samples were produced and their total polyphenolic content quantified using Folin-Ciocalteu method. Proximate analysis as well as in vitro simulation and in vivo techniques were established to analyze the samplesâ€™ starch digestibility and impact on glycemic control. GraphPad Prism (10.3) was deployed to statistically analyzed data.

Results:

Sprouting significantly enhanced nutritional quality and glycemic control. Fiber content increased in maize (from 1.75% to 2.92%) and sorghum (from 0.61% to 0.87%). Fat content decreased, while phenolic content rose. Sprouting reduced the digestibility and glycemic indexes of all samples, with millet showing a notable reduction from 85.2% to 82.3%. Levels of slowly digestible starch and resistant starch increased, indicating improved nutraceutical effects and metabolic health benefits.

Conclusion:

Sprouting enhances the nutritional properties of maize, sorghum, and millet, increasing polyphenols, protein, and fiber, while improving starch digestibility to mitigate postprandial blood sugar spikes. Thus, sprouting can be used to produce low glycemic foods beneficial for diabetes management.

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