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Division: Nutraceuticals & Functional Foods

Germinated Sorghum Shows Expressive Contents of Putrescine and Low Polyamine

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Abstract Body:

Sorghum is the fifth most important cereal crop in the world. It has been used extensively due to its ease of production and resistance to heat, water stress, and mineral deficiency. Furthermore, it is a gluten-free source of calories and nutrients, among them polyamines, which are important in cell growth and differentiation and show antioxidant activity. However, individuals with cancer should avoid polyamines in their diets. It is well known that germination can improve sensorial and nutritional quality of seeds. However, it increased polyamines levels during germination of soybean and corn.

The objective of this study was to investigate the changes on polyamines during germination of sorghum with and without tannin. The amines were quantified by ion-pair HPLC, post-column derivatization with *o*-phthalaldehyde and fluorimetric detection.

Sorghum was confirmed to be a good source of the polyamines spermidine and spermine. Overall, sorghum with tannins contained lower mean levels of putrescine and spermidine and higher spermine levels compared to sorghum without tannins. The changes of amine levels during germination were not affected by genotypes. During germination, there was a significant decrease in spermine levels. From the 3rd to the 7th germination day, there was a significant increase in putrescine levels: higher rates were observed in the radicle, followed by the cotyledon, and the leaf of sorghum. The levels of putrescine and spermidine, in general, increased along germination until the seventh day, when it reached the mature seeding stage. The highest levels were observed for putrescine, which increased 3,200-fold. Spermidine levels also increased, but at lower rate 71-fold. Spermine levels decreased in most of the genotypes of sorghum after germination. Unlike corn and soybean, the germination of sorghum did not increase the levels of polyamines, instead affecting mainly the putrescine levels. This characteristic makes sorghum a better diet component for individuals under cancer treatment.

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