

ANTIOXIDANT ACTIVITY AND GLUCOSIDASE INHIBITORY ACTION OF CEREAL-BASED EXTRACTS

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Plant phenolic antioxidants have many beneficial effects on the human body. For instance, they can reduce the risk of diabetes through the inhibition of alpha-amylase and alpha-glucosidase activities. This property can control the rise in blood glucose levels after meals in diabetics. In grains, only a small amount of phenolics exists in free form; most of these compounds are covalently bound to different polysaccharides. Enzyme-assisted and physical treatments are eco-friendly extraction methods that can release these phenolics from the conjugated form. In this work, the aim was to produce and characterize bioactive extracts from colored sorghum and barley varieties using an enzyme-assisted extraction approach combined with microwave treatment. Total phenolic and flavonoid content and antioxidant activity were determined in the extracts, and their effects against alpha-amylase and alpha-glucosidase activities were evaluated. Kinetic characteristics of effective inhibitory actions were also analyzed. The combined treatments resulted in free phenolic-rich antioxidative cocktails from the sorghum and barley residues, that acted as competitive inhibitors towards alpha-glucosidase activity. An alpha-amylase inhibitory effect for the extracts was also identified. The antioxidant activity and glucosidase inhibitory potential of colored sorghum and barley residue extracts prepared make them promising ingredients in anti-diabetic natural food-additive developments.

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