

EVALUATION OF ANTIOXIDANTS AND FOOD CHARACTERISTICS OF SORGHUM TO ESTABLISH IT AS A FUNCTIONAL FOOD

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Abstract

Materials and methods

Consumption of sorghum as direct food is declining in general, market for processed foods such as bakery products, flakes, flour, and rawa is picking up in urban areas when available in ready-to-eat form or as convenient foods as they are nutritionally superior, and are identified as functional foods. Most sorghum genotypes do not contain condensed tannins, but all contain method of Willis et al (1996). phenolic acids. These tannins from sorghum are excellent antioxidants. In 127 genotypes which include white and colored genotypes are analyzed for total Results and discussion polyphenols and phenols by two different methods and more than 40 genotypes with high poly phenols were identified as sources for high end food products to be made from sorghum. These 127 genotypes also had a wide variability for the antioxidant activity(free radical scavenging activity) (2.06-39.66 Ascorbic acid equivalents) analyzed by DPPH method. Twenty nine genotypes expressed a very good antioxidant activity and these genotypes coupled with phenolic compounds can be used in food processing industry to make ready to eat functional foods like 176985, IMS9B genotype shown lowest AEAC. flakes, vermicelli and pasta etc.

DPPH activity was measured as per the method of Blois(1958). Total phenols were estimated from the acidified methanolic grain extracts by Prussian Blue method and Polyphenols were quantified by Folin-Cioclateau method. Starch was measured by enzymatic method. Amylose was estimated by the colorimetric method. Protein was quantified by the

Sorghum is a gluten free and can be a very good energy source. They contain starch characteristic of slow digestibility which is useful for diabetic population. AEAC is used to express the antioxidant capacity in this preliminary study grain sorghum genotypes were evaluated fore the AEAC, phenolic content and free radical scavenging activity. Genotypes EP-105, C-43, EP-103 shown highest AEAC, IC50 values which ranges from 100 350-

Introduction and objective

Sorghum is a staple cereal native to tropical and sub tropical regions of all continents ranking fifth among the world's grain crops following wheat, rice, barley and maize. Phenolic compounds present in grains possess antioxidant activity that neutralizes free radicals, there by prevent cell and DNA damage and in turn delays ageing. The antioxidant defense system including enzymes (superoxide dismutase, catalase and glutathione peroxidase) and non enzymatic



defense mechanism (gluthatione, vitamins C and E) play an important role in scavenging oxidants and preventing cell injury.

The objective this study was to evaluate the phenol and polyphenol content along with antioxidant and free radical scavenging activities of methanol extract of *Sorghum bicolor* (jowar) established in vitro. The genotypes rich in strach, amylose, protein and beta glucan contents were also identified.



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Semolina

%ß- glucan content

•Ranged from 0.24 to 1.70 %.

• IS 30533 genotype has shown lowest ß- glucan content

followed by IS 31681 (0.24%)

• The genotype 27B has shown highest ß- glucan content (1.70%)

followed by RS 673 genotype (1.61%) and IS 33648 (1.61%) and C- 43 (1.55%).







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Genotypes with high protein content

