

TITLE: MICROORGANISMS ASSOCIATED WITH SORGHUM AT VARIOUS MALTING STAGES

AUTHORS: BOFFILL, Y.; SILVA, J.B.; MEDEIROS, M.B

INSTITUTION: ESCOLA DE ENGENHARIA DE LORENA/UNIVERSIDADE DE SÃO PAULO (ROD. ITAJUBA-LORENA, KM 74,5. CEP: 12602-810, SÃO PAULO – SP, BRAZIL)

ABSTRACT:

Celiac disease (CD) is a syndrome characterized by damage of the small intestinal mucosa caused by the gliadin fraction of wheat gluten and similar prolamines of barley and rye in genetically susceptible subjects. The keystone treatment of CD patients is a lifelong elimination diet in which food products containing gluten are avoided. Countries are beginning to require sorghum for use in gluten-free foods. However, the presence of high of undesirable microbes in sorghum malt is a concern. Consequently, there is a need for efficient and safe ways to control microbial growth during sorghum malting. Steeping is probably the most critical stage at which microbial proliferation begins. Therefore, it is probably the best stage at which the growth of bacteria and moulds could be inhibited or reduced in order to give a microbiologically better quality sorghum malt. Dilute formaldehyde is used to inhibit microbial growth during sorghum malting. However, there are some negative sentiment about the use of formaldehyde in food applications due to its carcinogenicity. As an alternative to use of toxic chemical such as formaldehyde, steeping in a dilute alkaline solution has been found to reduce the level of contamination without adversely affecting the sorghum grain. A Brazilian cultivar of sorghum (*Sorghum bicolor* L. Moench) was used for the study. Microbiological analysis of samples taken at various stages (steeping, germination, kilning, milling) of malting sorghum was investigated. Steeping in dilute alkali was investigated with the primary aim of reducing the microbial contamination. Steeping with 0.25% NaOH resulted in malts with the bacterial, yeast and moulds reduced to approximately 2.4, 3.5 and 2.3 log cfu/g, respectively. Analysis of variance was used to determine differences among microbial count. Steeping sorghum grains in food-grade 0.2% NaOH is recommended as a method for the control of bacterial and fungal contamination during sorghum malt.

Keywords: Bacteria, moulds, sodium hydroxide, sorghum malt, steeping

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