Optimization of Malting Conditions for Pito, a Traditional Alcoholic Sorghum (*Sorghum bicolor*) Beer in West Africa

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Abstract

*Pito* is produced by fermenting the wort extracted from malted sorghum. Malting conditions such as steeping schedule, duration of germination and drying temperature influence the quality of the malt. This study investigated the optimized conditions for malting sorghum for the production of pito. *Chireh*, a local Ghanaian sorghum cultivar was used. A 3×3×3 factorial design with steeping time (12, 16, 22 hrs), germination time (3, 4, 5 days), and malt drying temperature (34°C, 40°C, 50°C) was used to determine Diastatic Power, Extract Yield, Attenuation Limit and Free Amino Nitrogen (FAN). Response Surface Regression analysis indicated that germination duration significantly affected Diastatic Power, FAN and Extract Yield, but had no significant effect on Attenuation Limit. A drying temperature of 40°C will give a optimum value of 42.2 SDU/g for Diastatic Power, 77.9% Extract Yield and 75.6% Attenuation Limit. The optimal conditions for malting to obtain the standard Diastatic Power of 40-50 SDU/g, Extract Yield of 70-78%, dm and Attenuation Limit of 75-78% was 12.0 -12.5 hours steeping at ambient temperature of 26-32°C within the first 4 hours of steeping in 0.2% caustic soda followed by a 2 hour air rest and steep in water for extra 6 hours, 5 days of germination at 30°C and drying at 40°C. However, the maximum Diastatic Power 48.46 SDU/g was obtained at steeping schedule of 12 hours, 5 days germination at 30°C and sundrying temperature (34°C). FAN levels in all treatments were higher than the minimum requirement for good yeast nutrition and fermentation.