

“Mo gase ntšhe tota tota” - towards a fermented sweet reed beverage.

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Abstract

Ntšhe, a Setswana name for sweet reeds, a sweet sorghum variety (*Sorghum bicolor* (L)) is a commercial crop consumed as a delicacy in enormous quantities in Botswana and in southern Africa at large. Pre and post-harvest losses due to infestation by larval stages of stem borer moths, *Chilo partellus* often lead to severe financial losses as consumers condemn the worm-infested sweet reeds as unpalatable, “ *Mo gase ntšhe tota tota*” (this is not a sweet reed). Valorisation of condemned sweet reeds is one attractive route to reduce economic losses. Here, we took advantage of our understanding of yeast-insect interactions to isolate yeasts associated with larval stages of the stem borer moths and investigated their potential for production of an alcoholic sweet reed beverage. We isolated 33 yeast strains representing from the galleries and frass as well as from the guts of the larval moths. Assessment of their ability to ferment the simplest sugar, glucose, resulted in identification of 14 strains belonging to *Hanseniaspora* and *Candida* genera. These strains were further assessed for their capacity to ferment by calculating the rate of accumulation of carbon dioxide and ethanol when grown in the principal sugars found in sweet sorghum juice as sole carbon sources as well in sweet sorghum juice. In addition, as an industrially relevant trait, we tested the potential of the strains to tolerate brewing/fermentation-associated stresses. Furthermore, we assessed the aromatic complexity of the produced beverage. Our results suggest that non-conventional yeasts associated with the larval moths have potential for valorization of condemned sweet sorghum stalks to produce a sweet sorghum beverage.

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