Analysis of Substrates for a Continuous Fermentation Reactor for Mead

A Major Qualifying Project Report

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by

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Abstract

In the preparation of iQhilika, a traditional mead of the Xhosa of South Africa, roots are used to immobilize yeast, allowing for the continuous fermentation of the must that passes through the packed column. Dr. Garth Cambray's continuous fermentation reactor design was inspired by this traditional practice. Our prototype reactor on campus is based on Dr. Cambray's design, and was originally designed using ginger root as the biomass substrate to immobilize the yeast. In this project, we set out to try several types of biomass substrates to work as a replacement for ginger; dried apple, lemon rinds, orange rinds, habanero peppers, and jalapeño peppers. We fermented small batches of mead using each of these substrates, and used a GC-MS to observe how the different biomasses affected the fermentation process, and whether they imparted their own flavors onto the resulting mead. Additionally, we tested the orange rinds as the substrate in our packed column fermentation reactor.

This MQP contains information deemed confidential to the business interest of the industrial sponsor. Please contact Stephen Kmiotek at sjkmiotek@wpi.edu for additional information.