

Public Abstract

First Name:Warren

Middle Name:E.

Last Name:Auld

Adviser's First Name:Azlin

Adviser's Last Name:Mustapha

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:FS 2010

Department:Food Science

Degree:MS

Title:Survival and Exopolysaccharide Production of Lactic Acid Bacteria Grown on Grape Pomace

Microbial exopolysaccharides (EPS) used by the food industry, are typically produced using refined substrates. In this study we consider the possibility of using a food industry by-product, grape pomace, as the substrate. Five species of *Lactobacillus* were grown in chambourcin grape pomace and water at 21°C. Adjusted pH trials were also run.

Survival study - Plate counts and pH were collected at intervals over a 120 d period. ANOVA comparison of regression lines fitted to the plate counts for each species confirm a slower population decline in pH-adjusted samples ($p=4.8e-6$). The exception, *L. fermentum*, grew in the unadjusted sample. ANOVA comparison of the regression lines fitted to the pH values for each species indicated a difference ($p=1.6e-6$) between pH-adjusted and unadjusted samples. The pH of many of the unadjusted samples rose over the course of the study possible due to malolactic fermentation. With the notable exception of *L. fermentum*, we conclude that grape pomace is a poor substrate for long-term survival of the species tested.

EPS study - samples were grown for 4 d and the soluble fiber extracted by ethanol precipitation and freeze-dried. Significant differences were found between the quantity of extract recovered from pH-adjusted and unadjusted samples ($p=1.8e-3$). This difference is probably due to hydrolysis of the substrate by the base. FTIR spectra were collected for extract and peaks found at 1543, 1448 and 1404 (1/cm) in some of the treated samples which suggests the presence of EPS. Further investigation is necessary to confirm these findings.