

SURVIVAL AND EXOPOLYSACCHARIDE PRODUCTION OF LACTIC ACID BACTERIA GROWN ON GRAPE POMACE

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ABSTRACT

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 cm^{-1} in some of the treated samples which suggests the presence of EPS. Further investigation is necessary to confirm these findings.