

ISOLATION OF FARNESOL FROM FERMENTED PINEAPPLE JOSAPINE JUICE

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ABSTRACT

Farnesol is a sesquiterpene alcohol produced by a variety of plants and a number of animals. Besides being prized in the perfume and food industry, farnesol is known to be a quorum sensing molecule, an antimicrobial agent and an anti-cancer agent. Recent discoveries on various use of this sesquiterpene bring about the need for production of farnesol in large quantities. Hence, this project focused on the use of juice obtained from the Malaysian pineapple Josapine as the fermentation substrate for the production of farnesol. In this study, three fermentation conditions were carried out namely; *Saccharomyces cerevisiae* fermented Josapine juice, *S. cerevisiae* fermented Yeast extract-Peptone-Dextrose (YPD) broth and fermented (without yeast inocula) Josapine juice. All three fermentation conditions were fermented for a period of 72 hours. At three 24-hour intervals, 5 mL of fermentation broth was added with hexane to extract farnesol. The hexane extract then underwent thin layer chromatography (TLC), a sensitive qualitative method used to separate the compounds present in the hexane extract. Analysis of TLC was done using phosphomolybdic acid to detect the presence of farnesol. Farnesol was found to be present in all three fermentation conditions performed. The presence of farnesol in the extracts of *S. cerevisiae* fermented YPD broth revealed the ability of this yeast to produce farnesol via its endogenous mevalonate pathway. One of the major findings of this project was that farnesol was found to be a terpene naturally occurring in the Josapine pulp. At 24 and 48 hours, isolation of 9.0 mg/mL and 6.0 mg/mL of farnesol respectively from 150 mL of Josapine juice fermented by *S. cerevisiae* was successful in proving the ability of this yeast to utilize the sugars present in Josapine juice for farnesol production.