



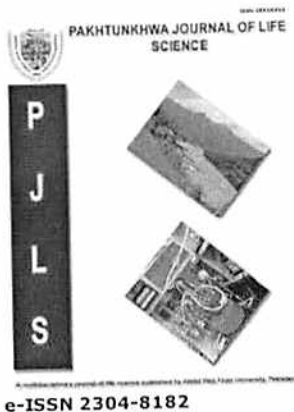
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Fermentation Performance of A Bakery Yeast Strain in Normal and Very High Gravity Media With Different Nitrogen Content

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ABSTRACT

Fermentation performance of the yeast *Saccharomyces cerevisiae* is influenced, among others, by growth media composition. Media with complex nitrogen source tend to give better fermentation performance. In the present study, we investigate fermentation performance of a bakery yeast strain in normal (20% w/v glucose) and very high (40% w/v glucose) gravity media with different nitrogen content. We used yeast extract – peptone (YEP) media with varying concentration of yeast extract, bacteriological peptone, ammonium sulphate, and potassium hydrogen phosphate in the media. For comparison, yeast nitrogen base (YNB) media was used. We found that increasing YEP media component in the media lead to better cell growth, cell health and fermentation performance. The cell appeared to overcome hyperosmotic stress due to high glucose concentration when higher content of YEP used in the media, as indicated by better cell viability. Surprisingly, cell grown in YNB media was observed has the highest viability throughout the fermentation, even though the fermentation performance was poorer. The best fermentation was observed when media with the highest YEP composition was applied. In this media, when normal and very high gravity media were used, ~97 and ~75% of the sugar were consumed, respectively. It was also found that ethanol yield was 0.327 and 0.277 g.g⁻¹ for normal and very high gravity media, respectively. The result of the present study showed that nitrogen content present in the media is really important for yeast growth and fermentation performance.

Key words: very high gravity media, ethanol fermentation, bakery yeast, nitrogen content

1. Introduction

Bioethanol is renewable and environmentally friendly fuel and

therefore considered as one of major alternative fuel that can respond to the depletion of fossil fuel [1, 2]. Bioethanol is