

5.0 CONCLUSION AND RECOMMENDATION

The present study shows the suitability of blackstrap molasses as a carbon source in fermentation of 2,3-butanediol. Since blackstrap molasses is considered as a waste of sugar refineries, it could be an attractive proposition to use it for the production of 2,3-butanediol.

The maximum yield was found as 20.93, 20.50, 24.30 and 22.29 g/L for an initial sugar concentration of 25.0, 50.0, 75.0 and 100.0 g/L respectively. This shows that product yield would decrease with increasing initial sugar concentration beyond 75.0 g/L. However, the product yield could be increased by increasing the total sugar through fed batch operation. The maximum yield was 44.0 g/L of diol with a total sugar feed of 100 g/L. In this case, the initial sugar concentration was 40.0 g/L, which favoured the cell formation and higher product synthesis when sugar was fed in a regulated manner. Thus, fed batch operation appeared to be a more appropriate strategy in the fermentation of 2,3-butanediol from blackstrap molasses.

In this work, oxygen supply was maintained at 1.8lpm. In butanediol fermentation, oxygen supply promotes cell growth and product synthesis at the initial stage but oxidises products at the later stage of fermentation. Thus, regulation of oxygen supply would be beneficial to achieve higher productivity.