

## **Effect of operating conditions on molasses fermentation for bioethanol production**

### **ABSTRACT**

The aim of the presented study was to evaluate the potential of molasses as bioethanol feedstock by studying the effect of different operating conditions on fermentation yield including initial sugar concentration (25-150 g/L), pH (4.5-9.5), and temperature (30-50°C). Molasses composition analyses indicated its richness with sucrose and fermentable sugars which qualify it as a promising feedstock for bioethanol production. The highest ethanol production (49 g/L) was achieved with an initial sugar = 150 g/L, pH = 4.5 but the maximum ethanol yield has been noted for: initial sugar concentration = 50 g/L, pH=4.5 and 30 °C of temperature which represent the optimum conditions for the fermentation. The kinetics study of fermentation experiment carried out under optimal conditions revealed that the fermentation reaction occurs in 3 phases: lag phase, acceleration phase and final phase.

**Keyword:** Bioethanol; Fermentation; Feedstock; Molasses; *Saccharomyces cerevisiae*