Production of Lactic Acid from Waste Sisal Stems Using a Lactobacillus Isolate

Author(s)
M.H.S. Muruke
Ken M Hosea
A. Pallangyo
J.H.F.G. Heijthuijsen

Abstract
Suitability of waste sisal stems as substrate for industrial production of lactic acid was studied. Local bacteria were isolated and screened for growth and lactic acid production from inulin, a polymeric carbohydrate present in the sisal stems. Four bacterial isolates were found to grow and produce lactic acid from sisal stem inulin. The best isolate, coded LAB4 produced 49g/L lactic acid from 150g/L sisal stem medium after 96 hours fermentation at optimal conditions (pH 6.5 and a temperature of 42°C). Furthermore, lactic acid production increased by 33% when calcium carbonate (5% final concentration) was included in the medium. Supplementation with yeast extract (0.05 - 0.2% final concentration) did not significantly affect lactic acid production. Preliminary morphological and physiological studies indicate that strain LAB4 belongs to the genus Lactobacillus. From these initial results, we propose both the bacterial isolate LAB4 and the waste sisal stems for further studies on industrial scale lactic acid production.