

## Assessment of Cassava Varieties in Ecuador for the Production of Lactic Acid From Starch by-Products

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**Abstract :** An important cassava quality production was detected in Ecuador. However, in this country, few products with low adding-value are produced from the tuber and none from cassava by-products. To our best knowledge, lactic acid was produced from Ecuadorian cassava bagasse starch in a biotechnological way. The objective of this contribution was to study the influence of the fermentation variables (pH and agitation) on the lactic acid production of Ecuadorian cassava varieties from bagasse starch. Enzymatic hydrolysis of cassava bagasse starch for INIAP 650 and INIAP 651 varieties spread in Ecuador was performed using  $\alpha$ -amylase and amyloglucosidase. Then, glucose was fermented by *Lactobacillus leichmannii* strains in different conditions of agitation (0 and 150 rpm) and pH (4.5, 5.0, and 5.5). Significant differences in ash, fibre, protein, lipids, and amylose were found in cassava bagasse starch of INIAP 650 and INIAP 651 with 1.4 and 1.3%, 4.3 and 6%, 1.2 and 2.1%, 1.9 and 1.5%, and 24.3 and 26.5%, respectively. The determination of lactic acid was performed by potentiometric and FTIR analysis. Conversions of cassava bagasse to reduced sugars were 71.7 and 85.1% for INIAP 650 and INIAP 651, respectively. The best lactic acid concentrations were 27.6 and 33.5 g/L, obtained at agitation 150 rpm and pH 5.5 for INIAP 650 and INIAP 651. Qualitative analysis conducted by FTIR spectrophotometry confirmed the presence of lactic acid in the reacted products. This investigation could contribute to the valorisation of residues from promising cassava varieties in Ecuador and hence to increase the development of this country.

**Keywords :** bagasse starch, cassava, Ecuador, fermentation, lactic acid

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