

Reduction of Fermentation Duration of Cassava to Remove Hydrogen Cyanide

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Abstract : Cassava (*Manihot esculenta* Crantz) is a root crop comprising an anti-nutritive factor known as cyanide. The compound can be removed by numerous processing methods such as boiling, fermentation, blanching, and sun drying to avoid the possibility of cyanide poisoning. Inappropriate processing mean can lead to disease and death. Cassava-based dishes are consumed in different ways, where cassava is cultivated according to their culture and preference. However, they have been shown to be unsafe based on high cyanide levels. The current study targeted to resolve the problem of high cyanide in cassava consumed in Rwanda. This study was conducted to determine the effect of slicing, blanching, and soaking time to reduce the fermentation duration of cassava for hydrogen cyanide (HCN) in mg/g removal. Cassava was sliced into three different portions (1cm, 2cm, and 5cm). The first portions were naturally fermented for seven days, where each portion was removed every 24 hours from soaking tanks and then oven dried at a temperature of 60°C and then milled to obtain naturally fermented cassava flours. Other portions of 1cm, 2cm, and 5cm were blanched for 2, 5, 10 min, respectively, and each similarly dried at 60°C and milled to produce blanched cassava flour. Other blanched portions were used to follow the previous fermentation steps. The last portions, which formed the control, were simply chopped. Cyanide content and starch content in mg/100g were investigated. According to the conducted analysis on different cassava treatments for detoxification, found that usual fermentation can be used, but for sliced portions aimed to size reduction for the easy hydrogen cyanide diffuse out and it takes four days to complete fermentation, which has reduced at 94.44% with significantly different ($p < 0.05$) of total hydrogen cyanide contained in cassava to safe level of consumption, and what is recommended as more effective is to apply blanching combined with fermentation due to the fact that, it takes three days to complete hydrogen cyanide removal at 95.56% on significantly different ($p < 0.05$) of reduction to the safe level of consumption.

Keywords : cassava, cyanide, blanching, drying, fermentation

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