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The Effect of Lactic Acid Fermentation on Cassava Leaves

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Abstract

Cassava leaves are mostly considered a neglected part of the cassava plant. In some countries like Nigeria or Congo, cassava leaves are traditionally consumed with starchy dishes. Cassava leaves are a rich source of protein, vitamins, carotenoids and minerals. However, cassava leaves also contain a considerable amount of cyanogenic glucosides, which should be removed before human consumption. This study examined the effect of lactic acid fermentation on cassava leaves. The cassava leaves bought from the local market in Stuttgart were used. The cassava leaves were fermented naturally or with starter culture from the lactic acid bacteria *Bifidobacterium*, *Lactobacillus acidophilus* and *Streptococcus thermophilus* for 21 days at 37°C. The characteristics of cassava leaves and fermented cassava leaves were measured by pH, electrical conductivity, colour, dry matter, ash, crude fiber, crude protein, glucose, total phenolic content and cyanide content according to standard methods. It was found that the pH, electrical conductivity, crude fiber, crude protein, glucose and cyanide content was significantly ($p < 0.05$) decreased in fermented cassava leaves. On the other hand, the ash content and total phenolic content was significantly ($p < 0.05$) increased in fermented cassava leaves. Furthermore, the colour parameters were significantly ($p < 0.05$) influenced by fermentation and became darker. However, there was no significant differences between naturally fermented cassava leaves and fermented cassava leaves with a starter. The results show that lactic acid fermentation can be used as a method to detoxify the cassava leaves and to increase and retain the valuable nutrients of the cassava leaves for human consumption.

Keywords: Cassava leaves, cyanogenic glucosides, detoxification, fermentation, human foods