

Lactic acid fermentation of Moringa leaf protein - selection of proteolytically active strains

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The demand for non-animal protein for food purposes is surging. Sustainable plant protein sources for high-quality protein alternatives for human nutrition are needed. Moringa oleifera is a fast-growing, drought-resistant shrub of tropical and sub-tropical regions with a high biomass/hectare ratio and a high protein content in the green leaves. The leaves can be further processed to obtain fractions that are rich in protein (30 -70 % dry matter base). However, the obtained protein fractions are largely insoluble which is a disadvantage for the application in various aqueous food systems. In the present study, the possibility to partially increase the protein solubility by lactic acid fermentations was investigated. Moringa leaf protein extract was fermented microaerobically under addition of glucose using selected species and strains of lactic acid bacteria. Proteolytic activity was assessed by measuring the glycine equivalents released through a controlled reaction with trinitrobenzene sulfonic acid (TNBS). The strains and combinations tested showed different potential in releasing glycine equivalents, indicating an increase in the solubility of the moringa proteins by fermentation. These experiments provide the foundation for further trials with targeted lactic acid fermentations with a proteolytic focus to tailor physicochemical and sensory attributes of protein powders derived from Moringa leaves.