

## Investigating the Role of *Lactiplantibacillus Plantarum* vs. Spontaneous Fermentation in Improving Nutritional and Consumer Safety of the Fermented White Cabbage Sprouts

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**Abstract :** Brassicaceae sprouts are promising candidates for functional food because of their unique phytochemistry and high nutrient density compared to their seeds and matured vegetables. Despite being admired for their health-promoting properties, white cabbage sprouts have been least explored for their nutritional significance and behavior to lactic acid fermentation. This study aimed to investigate the role of lactic acid fermentation i.e., inoculum vs. spontaneous, in reducing intrinsic toxicants load and improving nutrients delivering potential of the white cabbage sprouts. White cabbage sprouts with a 5 - 7 cm average size were processed as raw, blanched, *Lactiplantibacillus plantarum* inoculated fermentation and spontaneous fermentation. Plant material was dehydrated at 40°C and evaluated for microbiological quality, macronutrients, minerals, and anti-nutrient contents. The results indicate *L. plantarum* inoculum fermentation of blanched cabbage sprouts (IF-BCS) to increase lactic acid bacteria count of the sprouts from 0.97 to 8.47 log CFU/g. Compared with the raw cabbage sprouts (RCS), inoculum fermented-raw cabbage sprouts (IF-RCS), and spontaneous fermented-raw cabbage sprouts (SF-RCS), the highest content of Ca (447 mg/ 100g d.w.), Mg (204 mg/100g d.w.), Fe (9.3 mg/100g d.w.), Zn (5 mg/100g d.w.) and Cu (0.5 mg/100g d.w.) were recorded in IF-BCS. *L. plantarum* led fermentation of BCS demonstrated a reduction in phytates, tannins, and oxalates contents at a rate of 42%, 66%, and 53%, respectively, while standalone lactic acid fermentation of the raw sprouts reduced the burden of anti-nutrients in a range between 32 to 56%. The results suggest *L. plantarum* led lactic acid fermentation coupled with sprouts blanching is the most promising way to improve the nutritional quality and safety of the white cabbage sprouts.

**Keywords :** lactic acid fermentation, anti-nutrients, mineral content, nutritional quality

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