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# Nutraceutical Characterization of Optimized Shatavari Asparagus racemosus Willd (Asparagaceae) Low Alcohol Nutra Beverage

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**Abstract :** This study examines a low-alcohol nutra-beverage made with shatavari, a plant commonly used in traditional medicine. During fermentation, the addition of a specific strain of yeast affected the beverage's properties, including its pH level, yeast count, ethanol content, and antioxidant, phenolic, and flavonoid levels. We also analyzed the beverage's storage and shelf life. Despite its bitter taste, the low alcohol content of the beverage made it enjoyable to drink and visually appealing. Our analysis showed that the optimal time for fermentation was between the 14th and 21st day when the beverage had ideal levels of sugar, organic acids, and vitamins. The final product contained fructose and citric acid but not succinic, pyruvic, lactic, or acetic acids. It also contained vitamins B2, B1, B12, and B9. During the shelf life analysis, we observed changes in the beverage's pH, TSS, and cfu levels, as well as its antioxidant activity. We also identified volatile (GC-MS) and non-volatile compounds (LC-MS/MS) in the fermented product, some of which were already present in the Shatavari root. The highest yield of product contained the maximum concentration of antioxidant compounds, which depended on both the pH and the microorganisms' physiological status. Overall, our study provides insight into the properties and potential health benefits of this Nutra-beverage.

**Keywords :** antioxidants, fermentation, volatile compounds, acetonin, 1-butanol, non-volatile compounds, Shatavarin V, IX, kaempferol
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