

Abstract

Fermented nettles are a rich blend of nutrients, essential elements and microorganisms that have traditionally been used to increase the growth, resistance and yield of garden crops. The present study focuses on the biochemical characterization of fermented nettles in relation to the season of nettle harvesting. For possible comparison, all results were related to the amount of freeze-dried fermented nettles. While the amount of protein did not differ between spring, summer and autumn fermented nettles, the amount of neutral carbohydrates was higher in autumn fermented nettles. On the other hand, spring fermented nettles were distinguished by a higher phenolic content and a higher antioxidant capacity, which may be related to increased plant defences. Subsequently, optimization of the determination and comparison of the activities of selected hydrolytic enzymes, namely proteases, phosphatases and β -glucosides, which in turn are related to the degradation and provision of nutrients to plants in the soil, was carried out. The results indicated no differences in enzyme activity depending on the time of year of nettle harvest and highlighted the importance of fermenting microorganisms as a source of these enzymes. Finally, the detection of proteolytic activity was carried out, which showed the diversity as well as the different stability of nettle proteases depending on the storage method. The study contributes to a deeper understanding of the biostimulatory properties of fermented nettles and their potential use in agriculture and horticulture.

Key Words: nettle slurry, biostimulants, protease, phosphatase, β -glucosidase