Studies on Enhancing the Shelf Life of Mushroom Using Plasma Activated Water

Abstract

This project aims to enhance the shelf life of mushrooms through the application of Plasma Activated Water (PAW). The study investigates the properties of non-thermal plasma and the resulting PAW, focusing on their impact on mushroom preservation. PAW is characterized by the presence of reactive oxygen-nitrogen species (RONS), which have been shown to possess antimicrobial properties.
The research explores the effects of PAW treatment on the sensory properties, weight loss, microbial growth, sugar and protein content, and antioxidant activity of mushrooms. Various plasma device configurations and process parameters are optimized to produce PAW with the desired properties for effective mushroom preservation.

Student will perform following task:
• Characterization of PAW: Analysis of RONS concentration and physicochemical properties of PAW.
• Mushroom Preservation Studies: Assessment of shelf life extension through regular monitoring of sensory qualities and weight loss.
• Microbial Analysis: Evaluation of microbial growth inhibition on PAW-treated mushrooms.
• Nutritional Analysis: Measurement of sugar and protein content in treated mushrooms.
• Antioxidant Activity: Examination of changes in antioxidant levels post-treatment

Ref: [1]. Rathore, V., Nema, S.K. Enhancement of Shelf Life of Citrus Limon L. (Lemon) Using Plasma Activated Water. Plasma Chem Plasma Process 43, 1109–1129 (2023). https://doi.org/10.1007/s11090-023-10356-5

Academic Project Requirements:

1) Required No. of student(s) for academic project: 1

2) Name of course with branch/discipline: B.E./B.Tech. Other

3) Academic Project duration:

(a) Total academic project duration: 12 Weeks
(b) Student's presence at IPR for academic project work: 3 Full working Days per week

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