

Seminar Title	: Return Seminar: Application of Cold Plasma Technology on Functional Properties of Millet Flour
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Venue	: CH-306
Date and Time	: 14 Nov 2024 (12.15)
Abstract	: Millets, ancient grains valued for their nutrition and drought tolerance, include little millet (<i>Panicum sumatrense</i>), domesticated in India over 5,000 years ago. Despite its agro-economic and nutritional potential, little millet remains underutilized due to its coarse nature and limited research. This study evaluates the impact of cold plasma, a non-thermal technology for improving food quality, on the functional properties of little millet flour. Key properties such as water absorption capacity (WAC), oil absorption capacity (OAC), swelling capacity (SC), and solubility index (SI) were assessed. The highest WAC, OAC, SC, and SI were observed at 20 kV for 30 minutes (1.51 g/g, 1.34 g/g, 4.23 g/g, 0.085 g/g), while the lowest values were in the control (1.34 g/g, 1.10 g/g, 2.92 g/g, 0.054 g/g). Infrared spectra identified characteristic peaks for functional groups, and X-ray diffraction revealed reduced crystallinity in plasma-treated flour. Thermographs indicated lower peak temperatures, reflecting starch depolymerization and fragmentation. Microscopy showed plasma-induced surface alterations, including fissures and breakdown. The enhanced functional properties of the treated flour offer potential for novel food product development