National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: Return Seminar-Jojoba Oilcake Proteins: Advancing Sustainability with Alternative Proteins and Natural Emulsifiers
Speaker	: Nevetha Ravindran
Supervisor	: 2910
Venue	: CH-306
Date and Time	: 11 Feb 2025 (17.00)
Abstract	: Jojoba (Simmondsia chinensis), a drought-resistant crop, offers significant benefits in soil erosion mitigation, making it an ideal choice for sustainable agriculture in arid and semi arid regions. While the global demand for jojoba oil continues to grow due to its extensive industrial and cosmetic applications, the oil extraction process generates a largely underutilized, protein-rich by-product: jojoba oilcake. This study investigates the extraction and characterization of jojoba proteins, highlighting their potential as natural emulsifiers in food formulations, thus addressing the rising demand for novel, plant-based alternatives to traditional protein sources. Jojoba protein was extracted using alkaline extraction (pH 12) followed by isoelectric precipitation (pH 3.6), yielding a protein purity of 60%. Emulsions were formulated at a protein concentration of 4%, based on the Sauter mean diameter. Oil-in water emulsions at a 30:70 (oil:water) ratio exhibited desirable stability, making them suitable for food applications. Mass balance analysis revealed that 31% of the jojoba oilcake waste could be effectively converted into valuable oil and protein constituents. These findings demonstrate the excellent emulsifying properties of Jojoba proteins, enabling the stabilization of oil-in-water emulsions and contributing to sustainable resource utilization. By valorizing agricultural biomass, this research supports circular economy practices, reduces food waste, and aligns with global efforts to ensure food security and promote responsible consumption. Thus, Jojoba proteins foster innovative food solutions while supporting the nexus of food, water, and energy systems.