
Departmental Seminar

Seminar Title	: Bioreactor based batch and fed-batch cultivation of Bacopa monnieri cell suspension culture for enhanced synthesis of bacoside A
Speaker	: Jayashree Nanda
Supervisor	: Dr. Nivedita Patra
Venue	: BM Department Seminar Room
Date and Time	: 25 Nov 2024 (10.30 AM)
Abstract	: Bioreactor-based cultivation represents an advance approach for the mass synthesis of Bacopa monnieri, a medicinal herb widely renowned for its cognitive enhancement properties and adaptogenic effects. These pharmacological effects are primarily due to presence of triterpenoid saponin bacoside A. Traditional cultivation methods are hampered by limitation such as seasonal variation, lengthy growth cycles and low yield of secondary metabolites. To overcome these challenges, the use bioreactor system offers a controlled environment, precise control over culture conditions, enhanced nutrient absorption and ability to produce large quantities of biomass and valuable phytochemicals. Callus culture was established in MS media supplemented with 0.1 mg/l BAP and 1 mg/l NAA using leaf explants. The callus suspension culture condition was optimized using statistical tools. Mass synthesis of callus suspension culture was first attempted in 5l stirred tank bioreactor under optimized condition. Kinetics of substrate utilization, biomass accumulation and product formation were studied in batch bioreactor to develop a mathematical model. The batch model was extrapolated to fed batch and based on computer simulations suitable feeding time and rate was determined for maximum synthesis of bacoside. In comparison to batch cultivation, fed batch using stationary phase feeding strategy resulted in maximum synthesis of bacoside and biomass. ALL ARE CORDIALLY INVITED