RBT-502: Fermentation Biotechnology

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Unit I **8**

Introduction to fermentation technology: Interaction between Bio-chemical engineering, Microbiology and Biochemistry. History and development of fermentation industry: Introduction to submerged and solid state fermentation, Microbial culture selection for fermentation processes. Primary and Secondary metabolites.

Unit II **6**

Raw material availability, quality, processes and pretreatment of raw materials. Major alcoholic raw materials. Applications of the nonconventional raw materials (cellulosic material and hydrocarbons).

Unit III **8**

Different regulatory mechanisms involved in controlling the catabolic and anabolic processes of microbes. Induction, nutritional repression, carbon catabolite repression, crabtree effect, feedback inhibition and feedback repression.

Unit IV **10**

Creation/procedures for developing mutants of the desired microbes with the stable capacity of producing desired metabolites. Isolation and preservation of different types of mutants induction resistant, feedback inhibition resistant. Concept for over production of primary and secondary metabolites.

Unit V **8**

Details of the process, parameters and materials -for the industrial manufacture of Antibiotics (β-lactum), Solvents (acetone) Amino acid (Lysine), Organic acids (Citric acid), Alcohols (Ethanol), Ind. Enzymes (Protease/Amylase) and Biopharmaceuticals (Insulin/Interferon etc.)- Microbial Transformations, Microbial leaching.