



Metabolic engineering of high-value nutraceuticals and bioactive compounds

FACULTY DEVELOPMENT PROGRAMME

Resource Person

Dr. R. Narsimha

No. of Participants: 175

Date: 13th June 2020

About the session

The session focuses on different works in the field of metabolic engineering in plant cells. Metabolic engineering combines systematic analysis of metabolic and other pathways with molecular biological techniques to improve cellular properties by designing and implementing rational genetic modifications. Metabolic engineering allows for the rewiring of basic metabolism to overproduce both native and non-native metabolites. Among these biomolecules, nutraceuticals have received considerable interest due to their health-promoting or disease-preventing properties.

Objective:

- To discuss Next-generation metabolic engineering approaches toward the development of plant cell suspension cultures.
- Plant cell suspension culture technology
- Genome editing
- Chloroplast transformation technology

Outcome: The session discusses metabolic engineering; Classical Strain Improvement, Rational metabolic engineering, and Bioprocessing applications. A large array of nutraceutical products is being explored through the use of metabolic engineering. This approach bypasses the traditional challenges of direct extraction from animals and plants and provides an environmentally-friendly and sustainable platform for

industrial production. As demand for these products continuously increases along with population growth, the use of metabolic engineering becomes more important.

**From 1800 to the present:
Quest for active compounds**

1820s - Salicin was isolated from willow bark eventually to become "aspirin"

1820 - Quinine purified from Cinchona tree (*Cinchona* spp)

1805 - Morphine purified from opium poppy (*Papaver somniferum*)

1966 - Taxol purified from Pacific yew (*Taxus brevifolia*)

Taxus brevifolia
Pacific yew



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WEBINAR ON

Metabolic engineering of Nutraceuticals and Bioactive compounds

Resource Person

Dr. R. Narsimha

Organized by :

**Centurion University of Technology and
Management**

Date: 13-06-2020

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