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COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

CSIR
The Innovation Engine of India
CSMCRI

Technology for Demonstration & Scale up Study

Microalgal based γ-linolenic acid production

Background

Gamma-linolenic acid is also known as omega-6 fatty acid, an essential fatty acid for human health, but the human body cannot make it. It plays a very important role in brain function for its normal growth and development. It also helps stimulate human skin and hair growth, maintain bone health and regulate proper and healthy body metabolism. It also helps in maintaining reproductive health. Gamma-linolenic acid is a fatty acid not produced by the body and, therefore, must be obtained from the diet or supplementation. It is a potent antioxidant that kills free radicals and reduces stress.

Process Flowsheet
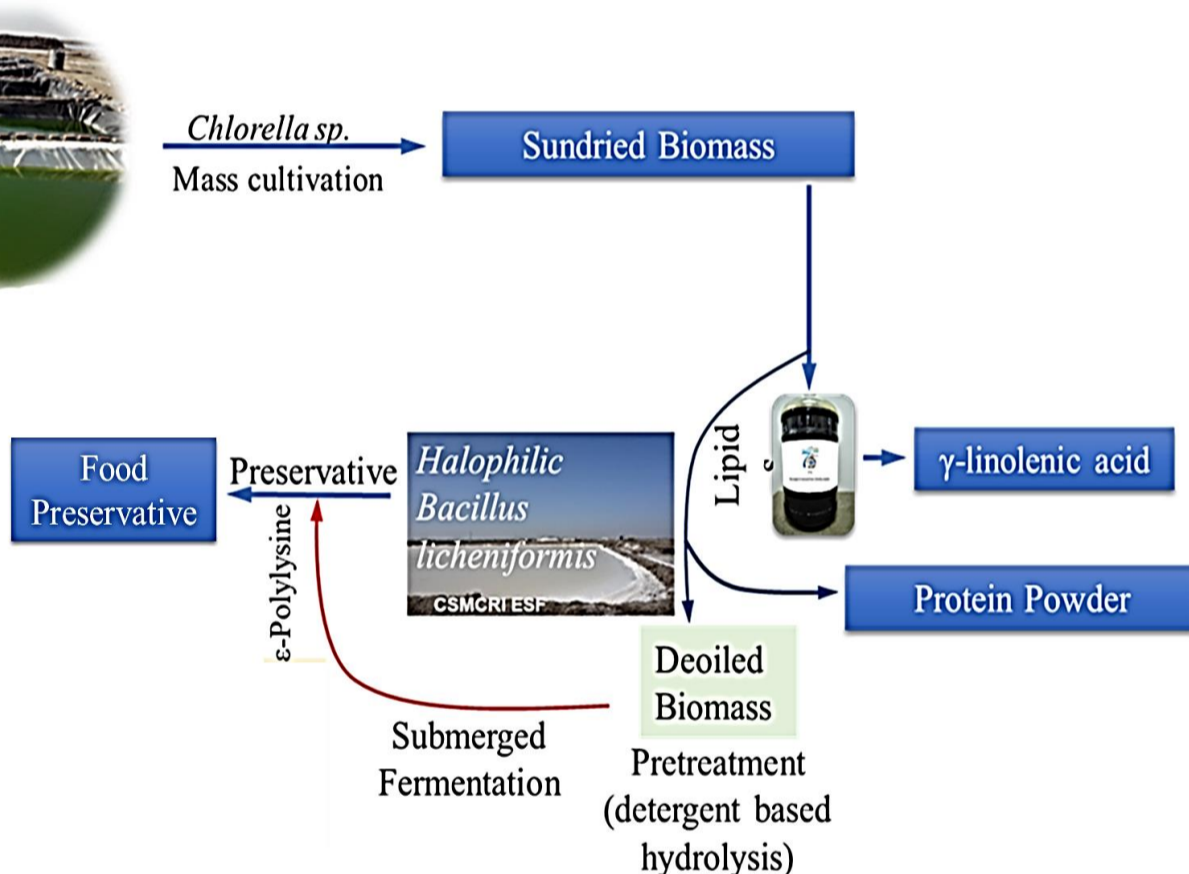
Key Features of the Process

- Microalgal based γ-linolenic acid can replace evening primerose oil or Borage Oil.
- ε-Polylysine was produced from *Bacillus licheniformis* with only 32h production age.
- Lack of manufacturing facility for ε-Polylysine production in India.
- Cost of production for γ-linolenic acid and ε-Polylysine is less as compared to commercially available processes.

Key Features of Product

- ❖ Promotes women's health in premenstrual syndrome.
- ❖ A rich, natural source of gamma-linolenic acid.
- ❖ Can help with dry skin, hair growth.
- ❖ It is used as a supplement in rheumatoid arthritis and different allergies.
- ❖ It is beneficial for brain function, for its normal growth and development.
- ❖ It also helps in stimulation of human skin and hair growth, maintains bone health and regulates proper and healthy body metabolism.

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CSIR-CSMCRI's developed process costing γ-linolenic acid (Purity>98.0%) - 890 ₹ per g, ε-polylysine (Purity>99.0%) - 11 ₹ per gram and protein powder 400 ₹ per kg.

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