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IIT-G signs MoU to promote C-Phycocyanin production technology for health, pharma sectors

18 February 2025 | News

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In a major step towards bringing sustainable biotechnology solutions from lab to market, Indian Institute of Technology Guwahati (IIT-G) has signed a Memorandum of Understanding with K.N. Bioscience (India) Pvt. Ltd., for the large-scale commercialisation of C-Phycocyanin production from Spirulina biomass.

The MoU was signed by Prof. Rohit Sinha, Dean Research & Development, IIT Guwahati, and Sudha Reddy, Founder and Managing Director, K.N. Bioscience (India), with Prof. Debasish Das, lead scientist behind the technology.

C-Phycocyanin is a natural blue pigment derived from Spirulina, a type of cyanobacteria that grows using carbon dioxide and sunlight. It has multiple industrial applications, such as a natural blue food colorant, replacing synthetic dyes in confectionery, ice cream, and beverages; a nutraceutical and pharmaceutical compound, with anti-inflammatory, neuroprotective, and anti-diabetic properties; a fluorescent marker for diagnostics; a cosmetic ingredient for skin rejuvenation and wound healing; and a protein-rich aquafeed and poultry supplement for enhanced growth and disease resistance.

Despite its immense potential, widespread adoption of this pigment is limited due to its high production costs and inefficiencies in extraction and purification.

Currently, only a few Indian companies work with high-value microalgal products like phycocyanin and omega-3 oils, but this innovation opens doors for new industry players, boosts job creation, and strengthens India's biotechnology industry. From a global point of view, this advancement can position India as a key exporter of this valuable compound.

The technology has been successfully demonstrated at flask level experiments, 5L fermenter trials and 100L air lift flat plate photobioreactor.

Additionally, a patent has been granted on the downstream process, developed by IIT Guwahati researchers for maximum extraction of C-phycocyanin from spirulina biomass and its purification to analytical-grade standard. Currently, the Technology Readiness Level (TRL) stands at 6, indicating its near-commercial viability.