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IIT-K & BIT Mesra develop novel drug delivery system to promote bone healing

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Invention is based on medicinal plants used in traditional medicine for healing of diseased and injured bones



Researchers from the Indian Institute of Technology Kanpur (IIT-K) and Birla Institute of Technology (BIT), Mesra have jointly developed a novel drug delivery system that enables efficient delivery of phyto-bioactives to promote healing of diseased and injured bones.

Phyto-bioactives are natural chemicals produced by plants that have health benefits for humans. Phyto-bioactives have been commonly used in traditional medicine for the healing of diseased and injured bones and the innovative delivery system developed by the team helps in carrying these phyto-bioactives to the site of the bone disease or injury where it promotes healing.

The delivery system has been built using new technology for usage of nano-hydroxyapatite, a biomaterial that is known to help remineralize and repair teeth and bones. The nano-hydroxyapatite-based bone substitute allows local, sustained release and long-term delivery of the phyto-bioactive constituents to heal bone defects.

The innovative delivery system has been developed for phyto-bioactives from the plant, Cissus quadrangularis (CQ), commonly known as Veld grape. This plant is known for its benefits for joint and bone health and the drug delivery system circumvents the limitations associated with growth factors, hormones and synthetic drugs. The delivery system promotes stimulation of osteoblast genesis (bone cells for the development of new bone) and can be used as preventive/alternative natural medicine for bone diseases such as osteoporosis. The innovation will cater to critical bone defects with acceleration of the growth of new bones and is expected to bring significant changes in bone healing treatments.