
Departmental Seminar

Seminar Title	: Bioengineered Biohybrid Composite for Controlled Drug Release
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Venue	: BM Department Seminar Room
Date and Time	: 25 Nov 2024 (11.15)
Abstract	: Advances in pharmacokinetics demonstrated the significance of drug release in favouring therapeutic effectiveness. Development of a dynamic cascade drug delivery system facilitates prolonged drug release and personalized treatment. In our present study, properties of piperine loaded xenogenic pericardium scaffold is evaluated for a potential biohybrid based drug delivery system. Decellularized tissues are utilised as an implanted drug delivery device to extend the supply of medications and genetic materials over a set period of time, to avoid post-surgery immune response and other chronic conditions. Piperine, the pungent component in black pepper (<i>Piper nigrum</i> L.), exhibits a wide range of pharmacological effects, including antitumor, and antioxidant activities. The incorporation of the aforesaid compound into the matrix is a potential biohybrid scaffold with sustained drug release. Piperine is extracted from <i>Piper nigrum</i> dry seeds by ethanol extraction method. Caprine pericardium is decellularized by SDS and Triton X-100. Biohybrid of decellularized Caprine pericardium-piperine is prepared by solvent evaporation method. The physicochemical properties of Piperine, the decellularized tissue and the fabricated biocomposite are investigated. The swelling and drug release for the drug loaded matrix is performed. The swelling studies revealed a decrease of swelling percentage of piperine loaded decellularized pericardium ($199 \pm 29.78\%$) compared with unloaded matrix. Piperine loaded decellularized pericardium and the prospective use of a natural scaffold is a promising tool in tissue engineering and regenerative medicine. Keywords: Biohybrid, Decellularized tissue, Piperine, Drug delivery system. ALL ARE CORDIALLY INVITED