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# Biomechanism profile of Intervertebral Disc's (IVD): Strategies to successful tissue engineering for spinal healing by reinforced composite structure

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Complex multi-lamellar biocomposite structure of Intervertebral disc (IVD) imparts flexibility between adjacent vertebra, as well as allows transmission of loads from one vertebra to the next along the spine. The disc has a 15- 25 concentric layered laminate structure; each layer is reinforced by collagen fibers which are aligned at approximately 30 degree angle in successive layers with respect to the transverse plane of the disc. This fibrous organization is critical to the proper biomechanical functioning of the disc, such as to convert compressive force to lateral force, to withstand extrinsic tensile stresses (circumferential, longitudinal and torsion). As a result spine becomes flexible to bend and twist. With the regular aging the disc gets dried up lost its flexibility and biomechanical elasticity. That's why we need tissue engineering of that degenerated tissue to make a proper ailment of that body part by the help of some textile fibers like silk- hydrogel, CMC, PVA- collagen, PGA – chitosan composites. The synthetic polymer has shown great promise for easiness of production, variability in properties and biodegradability and biocompatibity and nonimmunogenic response inside the human spinal body for the novel cause of removal and restoration of degenerated human intervertebral disc.

## Biography

Kunal Singha has completed his M.Tech in 2011 at an age of 27 years from Indian Intitute of Technology, Delhi (IIT, Delhi) in the department of Textile technology in Fibre Science & Technology. He is the assistant professor of the textile Engineering department in Panipat Institute of Engineering & Technology, Haryana, India, a esteemed AICTE approved college in India. He has published more than 23 papers in reputed international (peer-review) and national journals.

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