

Bio-processing of silk fiber for making surgical sutures

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Silk is a bio material used for many medical applications. One such application is its use as a surgical suture material. In this research the bio-process of making this surgical suture using silk filament fiber is discussed. The first process in silk braid manufacturing is degumming. Degumming is the process of removing sericin or silk gum from the silk filament. Removal of sericin would improve the sheen, color, hand and texture of the silk filament. The gum can serve as a protective layer and is typically left on the silk until it is ready to dye. The silk filaments are dried and made ready for dyeing. During degumming bio-chemicals are mainly used to remove the gum. After degumming, the silk fiber is dyed using a natural dye called as logwood black through a natural process of dyeing and oxidation. In the suture making stage this dyed silk fiber is doubled, twisted and waxed to meet the USP size standards. Also in this study physical property of silk braided suture materials is determined. Analysis of silk braid suture material is carried out after determining the fiber and yarn properties of silk braided suture materials using data generated by fiber testing instruments like vibroskop 400 and INSTRON 6021. The materials used in this study include standard silk braided sutures conforming to USP norms. Several trials were conducted on the selected samples to determine its fiber and yarn properties. Analysis and effect studies were carried using the experimentally generated data. Correlation analysis was carried out on fiber, yarn and knot pull strength properties of silk braided suture materials. However, from the result analysis it was found that fiber and yarn properties have a positive impact on the overall performance of suture material.

Biography

Gurumurthy B R is pursuing his PhD in Textiles from Visveshvaraya Technological University, Belgaum. He is presently working at Lovely Professional University, Jalandhar. He has published about 7 research papers in reputed journals and presented his research findings in various national and international conferences in India and Abroad.

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