

Biosteel from goat

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With the increasing research and study on genetic engineering, human life has been made easy and effective. Nature has many sources of biologically strong materials that are employed for the manufacture of various things ranging from parachutes to artificial ligaments. Biosteel is an exciting and unique product obtained from nature. It is a renewable and biodegradable fibre that is produced by genetic transgenesis between spider and goat. The dragline silk gene, which is responsible for spider web formation is extracted from the golden orb weaver spider and cloned inside the goat embryo. The genetically altered goat with a spider gene gives milk which contains the protein that forms spider silk, which can be extracted to produce biosteel fibres. The purified protein is isolated, dried, and dissolved using solvents and then transformed into microfibrils using the wet spinning method. According to studies, this biosteel has been found to be 7-10 times stronger than steel and can be stretched up to 20 times without the size being altered; it can resist the temperature ranging -20 to 330 degree Celsius. In addition, it is also lighter than synthetic, petroleum-based polymers. These properties allow it to be utilised in the manufacture of things where strength and lightness are crucial, e.g. aircraft, racing vehicles, etc. Besides, this biosteel with a high degree of toughness, strength, lightness and flexibility could offer applications in a wide variety of medical products, such as ligaments, tendons, etc. Also, biosteel is eco-friendly hence it can be commercially applied.

Keywords: Biosteel, Clone, Spider, Goat, Fibre, Protein, Eco-friendly, Transgenesis

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