

Spider silk: The Biosteel

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Spider silk is extremely tough, i.e., a pencil-thick spider silk fibre can carry a weight of 380 tons. It is extremely skin-friendly and light in weight, but it is still not exploited to its fullest potential as natural silk obtained from the silkworm is always in the boom compared to spider silk. Cultivation of spiders is very problematic as the spiders act as cannibals when they are grown together. Owing to genetic engineering, in 2000, the first transgenic goat was engineered by a Canadian company, Nexia Biotechnologies Ltd. It produced spider silk in the milk of a goat, which was separated to form silk fibres. Later, the researchers at KAIST succeeded in producing spider silk in < which is comparatively more cost-effective than spider silk from milk. Following this, a company called Kraig Biocraft Laboratories succeeded in producing spider silk from silkworms. It is innovative because silkworms can naturally produce silk and genetically modifying it will produce highly tensile silk fibres. Spider silk is used for the production of biodegradable sutures, artificial tendons and ligaments, fishnets, bulletproof vests, footwear, clothing, etc. Recently, many companies are showing their interest in spider silk. Adidas unveiled the world's first shoe made from spider silk fibres. More research work is still required to produce spider silk in an easier way. In addition, many companies may adopt spider silk as it is stronger than synthetic fibres and is eco-friendly too.

Keywords: Spider silk, Transgenic goat silk, Biosteel, Silkworm spider silk, Genetic engineering

Citation:

Talari Hanny Sundara Agnes. Spider silk: The Biosteel. The Torch. 2022. 3(14). Available from:

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