Silk Fibroin Methacryloyl

Cat. No. HPB-012

Lot. No. (See product label)

Application	Bone and cartilage engineering,flexible electronics,drug delivery
Introduction	Silk fibroin (SF) is derived from the degumming of silk and is a high molecular weight polypeptide composed of multiple amino acids. The SF molecule consists of a hydrophobic peptide chain (H chain) and a hydrophilic peptide chain (L chain). The special amino acid sequences of the H chain and the L chain enable them to form a variety of protein secondary conformations. The various properties of silk fibroin materials can be effectively controlled by regulating the secondary structure of silk fibroin, including the preparation of high-strength and high-oriented materials. Due to its biocompatibility, biodegradability, and high tensile strength, it has been used in various biomedical fields, including wound dressings, artificial blood vessels, and cell culture. It has been certified by the US Food and Drug Administration (FDA) and is a highly promising biomaterial. Silk fibroin cannot be dissolved in water due to its high crystallinity. This hydrophobic property makes it difficult to obtain a uniform structure when it is compounded with hydrophilic systems such as hydrogels. In order to improve the dispersibility of silk fibroin, a silk fibroin solution is often obtained by salt dissolution and dialysis, and then the corresponding composite material is prepared. The preparation process of silk fibroin solution is complicated, with poor stability and easy spontaneous gelation, which limits its biological application.

FOR RESEARCH OR FURTHER MANUFACTURING USE ONLY

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In order to meet different application requirements, our team selects high-quality mulberry silkworm cocoons and produces silk fibroin products with good water solubility, stability and material extensibility that can be quickly dissolved in water through a series of processes. It can be used with various types of hydrogels such as GelMA and HAMA to meet the needs of different application fields.

Silk Fibroin Methacryloyl (SilMA) is a methacryloyl modification of SF by glycidyl methacrylate, introducing double bonds on the SF molecule. Due to the special spatial structure of the SF molecule, it is very easy to form crystals and is difficult to dissolve in water before modification. After the introduction of additional chemical groups, it can be quickly dissolved in water, which allows SilMA to be photocured into a hydrogel. The products launched by our team have undergone strict raw material screening and quality control, and have stable physical and chemical properties. They solidify into glue within 10 seconds under visible light irradiation, have good biocompatibility, strong material scalability, and can provide a variety of viscoelastic properties to adapt to different application fields.

Description	This material set includes methacrylylated silk fibroin and photoinitiator LAP.
Application Areas	Applied to cell culture, biological 3D printing, tissue engineering, etc.
Appearance	White sponge-like
Storage	Dry package: room temperature, 3 months; 4°C, 12 months; -20°C, 18 months.
Package Size	1g/bottle, includes 0.05g of LAP initiator 5g/pack, does not include initiator 10g/pack, does not include initiator

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