

Review on Biomaterial Characters of Silk Proteins

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Abstract

Insects include important species in the animal kingdom in terms of biodiversity, economic impact and ecological role. *Bombyx mori* (L., 758) (Insecta: Lepidoptera), known as the silkworm, is one of the most important insect species that has maintained these characteristics for centuries and is the main production source of silk. Silk is a natural polymer synthesized by the epithelial cells of silkworms and spiders. Silk, which is used especially in the textile sector, is also used in the production of biomaterials in the biotechnology age we are in. Today, raw silk obtained from silkworm cocoons is used in many different areas such as silk fabric, silk carpet, surgical and parachute cord, souvenirs, and military bulletproof vest manufacturing. Silk consists of two main proteins called fibroin (fibrous protein) and sericin (globular, gluing protein). Silk fibroin; It is quite suitable for biomaterial production due to its properties such as biocompatibility, permeability, high mechanical properties, controllable biodegradation rate, and processability in aqueous solutions. Approximately 75% of unprocessed silk consists of fibroin. Silk sericin is a globular protein that wraps fibroin fibers with its adhesive properties and sticks them together in the cocoon and is necessary to add shine to the fabric. Sericin is an inflexible, brittle substance. It is also antibacterial, resistant to ultraviolet wavelength rays, and has a structure that can take and give moisture. As a result, the scope and content of this study consists of the analysis of silk proteins and biomaterial characters.

Key Words: *Bombyx mori*, Biomaterials, Silk, Sericin, Fibroin

