

1-19. Silk Fibroin Microsphere and Its Characterization

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Using gel filtration chromatography (GFC), pure separation of high molecular silk fibroin was obtained and silk fibroin microsphere particles (SFMP) could be simply made by spray dryer method. Also, some of its physicochemical properties and morphology were investigated. The average molecular weight (Mw) of pure silk fibroin protein dissolved in calcium chloride is about 61,500 g/mol as measured by gel permeation chromatography(GPC). Morphologically, SFMP was spherical in shape, and particles, average $2\pm 10\mu\text{m}$ in size, were observed by SEM and particle analyzer, respectively. Obtaining microspheres particles by spray dryer method was accelerated the transition from the random coil to the β -sheet structure during spray dryer treatment. It was identified by the basic fourier transform infrared spectroscopy of SFMP. The various pH range of SFMP's swelling ratio is dependent on the pH of the solution, not on the occurred gelation.

That characteristic structure might be applied to immobilization of drugs and SFMP would be used for the biomaterials with skin affinity, is superior to other matrix materials.