

Structural and Physical Properties of Silk Fibroin/Alginate Blend Sponges

Kwang-Gill Lee¹, HaeYong Kweon¹, Joo-Hong Yeo¹, Soon-Ok Woo¹, Sang Mi Han¹, DaeHyun Nho², Jang-Hern Lee², Chang Seok Ki³, Young Hwan Park³

¹ *Department of Agricultural Biology, National Institute of Agriculture and Technology, Suwon 441-100, Korea ;* ²*College of Veterinary Medicine, Seoul National University, Suwon 441-744, Korea ;* ³ *School of Biological Resources and Materials Engineering, Seoul National University, Suwon 441-744, Korea*

Silk fibroin/alginate blend sponges were examined through IR spectroscopy, X-ray diffractometry, and differential scanning calorimetry to determine the structural changes of silk fibroin. The effects of fibroin/alginate blend ratios on the physical and mechanical properties were investigated to discover the feasibility of using these blend sponges as biomedical materials such as wound dressing. The compressive modulus of silk fibroin was increased up to 30 kPa from 7.1 kPa by blending with alginate. Thermal crystallization behavior of fibroin induced by heat treatment were restricted by blending with alginate. In spite of that, the structural characteristics of fibroin were not changed by incorporation with alginate.