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Development of Functional-Cosmetics by Hydrolysated *B. mori* Silk Fibroin

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Objectives

The silk fibroin has been widely used as industrial materials such as cosmetics and food1)-2). In this study, general hydrolysate of *B. mori* fibroin as a biomaterial, development of functional-cometics included hydrolysate of *B. mori* fibroin will be discussed.

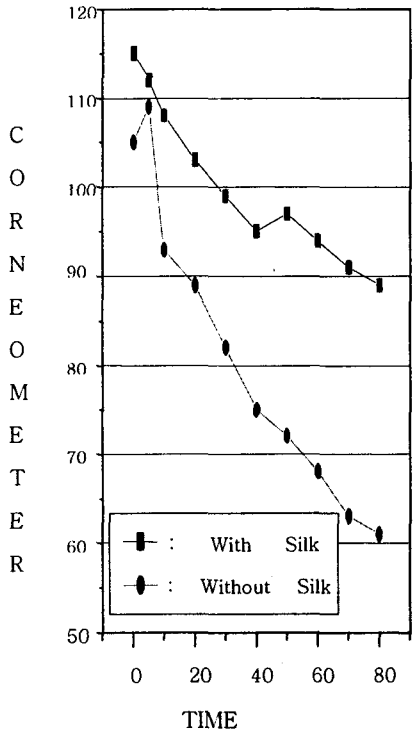
Materials and Methods

1. Materials - Raw materials : Degummed B. mori fibroin3)
   - Hydrolysate silk fibroin : treated with calcium chloride and desalting by gel filtration chromatography method4) and made by using two kinds of treatment, hydrochloric acid hydrolysis (A) and enzymatic digestion (B).
2. Method - Molecular weight : gel permeation chromatography method
   - Moisture effect and wrinkle free test : using corneometer and MTT method
   - 13C NMR : 400 MHz JEOL alpha-400 NMR spectrometer5).

Results and Discussion

1. *B. mori* fibroin was treated with calcium chloride to obtain the fibroin aqueous solution.
2. The fibroin hydrolysates were made by using two kinds of treatment, hydrochloric acid hydrolysis (A) and enzymatic digestion (B).
3. Using gel filtration chromatography system, pure separation of high molecular silk fibroin was obtained and silk fibroin hydrolysate oligo-peptide could be made by under hydrochloric acid and enzymatic treatments.
4. 13C NMR spectra of sample A indicated simple amino acid pattern attributed to main amino acid composition of the silk fibroin; Gly, Ala and Ser residues. In the case of sample B, various separated peaks around main peak are observed, suggesting that sample B contains peptides having various amino acid sequences.
5. The best concentration of highly moisture effects is calculated about 1%(w/w) of hydrolysate silk fibroin, measuring that 50% up moisture ability and 44% up wrinkle free effect by corneometer and *in vitro* MTT test, respectively.

6. Functional-cosmetics for skin care are made using hydrolysate silk fibroin.



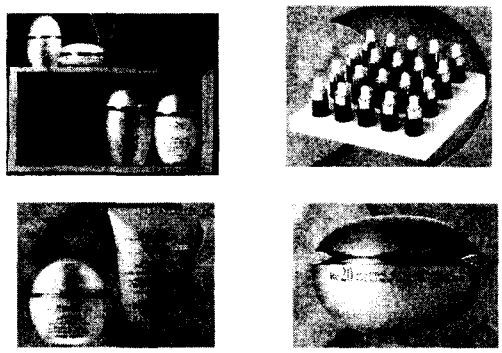


Fig. 2. Developed various functional-cosmetics including hydrolysate fibroin

Fig. 1. Moisture effect of silk fibroin costemistics (location)

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