# Study on Effective Extraction of Chicken Feather Keratins and Their Films for Controlling Drug Release

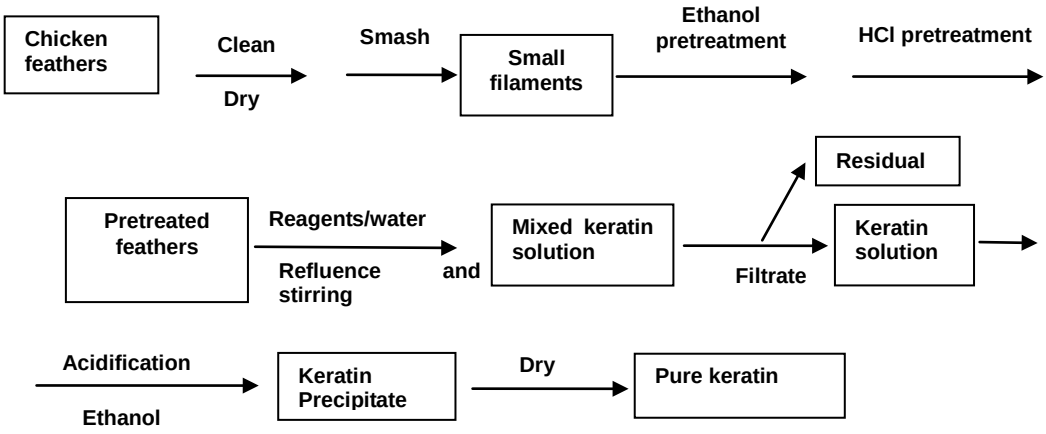
Xiao-Chun Yin, Fang-Ying Li, Yu-Feng He, Yan Wang, Rong-Min Wang*,

*Key Laboratory of Eco-Environment-Related Polymer Materials of Ministry of Education, Key Laboratory of Polymer Materials of Gansu Province, College of Chemistry & Chemical Engineering, Northwest Normal University, Lanzhou 730070, China*

## 1. Materials and Methods

### 1.1 Extraction of keratins from feathers

The process of extraction is described in Scheme 1.




Scheme 1

### 1.2 SDS Polyacrylamide gel electrophoresis (SDS-PAGE)

SDS-PAGE analysis was performed according to the method of Laemmli [1]. Reduced keratin solution was diluted 1:1 with 2x sample buffer containing 10% SDS, 50% glycerol, 2-mercaptoethanol, 1% bromophenol blue, and 1 mol/L Tris-HCl. The proteins (0.2 mL samples) were separated using a vertical slab gel electrophoretic system with a 5 % stacking gel and a 15% separation gel, which was prepared from a 30% (w/v) acrylamide/bis-acrylamide solution (37.5:1) with 1.0 mol/L Tris-HCl (pH 8.8) and 10% (w/v) SDS. Electrophoresis was performed at 200 V, 20-30 mA. The proteins in the gel were stained with 0.5 g/L Coomassie brilliant blue R-250, 10% acetic acid, and 50% methanol for 1 h and destained in 10% acetic acid and 45% ethanol. For

*Corresponding author: Rong-Min Wang: Tel/ Fax: +86-931-7970358; Email: wangrm@nwnu.edu.cn

SDS-PAGE of keratin, it was reduced keratin.

## 2. Results and Discussion

### 2.1 The photograph of keratin powder and keratin film

Figure 1 showed the photograph of keratin powder (Figure 1a) and keratin film (Figure 1b). In Figure 1a reveals that the powder consisted of spherical particles. Figure 1b reveals that the surface of the film was very smooth and tight in dryness.

a b

Figure 1. The photographs of chicken feather keratin powder(a) and keratin film(b) .

### 2.2 SDS-PAGE

Figure 2 depicts the protein separation of extracted keratin. It shows the SDS-PAGE patterns of the Mark and reduced keratin solution. In lane 2, bands of microfibril keratins in the range of 20-36 kDa are present. The molecular weight of extracted keratin is agreed with MALDI –TOF MS result.

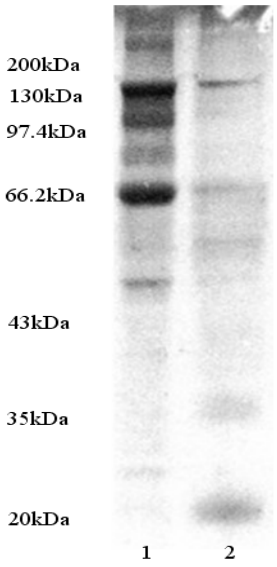



Figure 2. SDS-PAGE of Reduced Keratin from Chicken Feather (Lane 2) and Standard (Lane 1),

References:

[1] U. K. Laemmli. Nature, 227, 680 (1970).