

豬皮中低終端 膠原蛋白之製備.

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Abstract

Hyaluronan and collagen are important materials in biomedicine. The structure of hyaluronan molecule is composed of many repeating disaccharide units, and its molecular weight can reach to 10^6 kDa. Hyaluronan solution has special viscoelastic properties and can supply many physical functions in animal body, such as lubrication, protection and support. Interactions between hyaluronan and receptors on cell surface are related to different physical processes such as cell fission, cell migration and phagocytosis. Collagens are major structure proteins in animal body and are mainly distributed over connective tissues. In a physiological solution, collagens were aggregated and formed a fibromatrix. Due to this property, collagens in extracellular matrix will constitute structural skeletons. Collagens also play an important role in stopping bleeding and wound healing. Hyaluronans and collagens don't induce the immune responses, thus they are not only used as wound healing medicines, tissue replacements and drug-delivery materials but also used in osteoarthritis healing. For example, hyaluronan solution can be a viscosity supplement in arthritic joints to increase the lubrication of joint fluids and release the patient's pain; taking collagen type II orally can regulate immune system and protect cartilage from T cell attacking. Most combs and pig eye-balls are waste materials in Taiwan. To evaluate their additional value, we try to utilize them as raw materials for extracting hyaluronan and collagen. The objective of this study is to modify the traditional method of extracting hyaluronan, and to compare the physicochemical properties of hyaluronan and collagen products extracted from combs and pig eyeballs with different methods. The results showed that the yield of hyaluronan extracted from cock combs is higher than which from hen combs and pig eye-balls. The modified method reduce the usage volume of chloroform in extract processing, and the amount of hyaluronan is the same as that from traditional method. The hyaluronan from cock or hen combs by different extraction methods had almost same molecular weights which analyzed by acetate electrophoresis performance and this value is similar to commercial product. However, the molecular weight of hyaluronans from combs is 1.3×10^6 dalton ,but which from pig eye-balls is 1.15×10^6 dalton. Besides, yield of collagen extracted from cock combs is higher than that from hen combs and residues of hen combs by hyaluronan extracting experiment. Collagen type I is the major content of the collagens from combs and these results were evidenced by electrophoresis performance.

In conclusion, using combs as raw materials for extracting hyaluronan and collagen is available and practicable.