微脂粒雙包覆亞佛苯酮與熊果素之特性研究

Characteristic analysis of avobenzone and arbutin co-encapsulated in liposomes

中文摘要

本研究的目的將藉由微脂粒載體技術應用於化妝品的雙成分包覆，將美白與防曬成分結合在同一載體系統，以結合兩者的功效。本研究將微脂粒脂雙層部位包覆疏水性的防曬劑 avobenzone、微脂粒脂雙層的親水性內層則包覆美白劑 arbutin，加強防曬劑的功能性與美白劑的穿透能力。本研究以不同比例的脂質、防曬劑與美白劑，利用薄膜水合法以及反相蒸發法製備雙包埋微脂粒，並觀察兩種製備方式對雙包埋微脂粒之粒徑大小、包覆量、包覆率等物化性質進行分析與探討，並進行模擬皮膚穿透試驗，觀察防曬劑與美白劑穿透情形。實驗結果顯示，雙包覆的微脂粒粒徑範圍約在 150-400 nm ，且反相蒸發法對於難包覆的親水性美白劑之包覆率較薄膜水合法來的高，從 0.6% 提升爲 1.6% 。在模擬皮膚穿透試驗上，實驗結果發現美白劑可穿透模擬皮膚層到達承接室，而防曬劑則大多累積於模擬皮膚層。因此得知，藉由微脂粒載體技術雙包埋防曬劑以及美白劑時，可有效控制防曬劑在塗佈表層達到光保護效應，而美白劑則會經由微脂粒的輸送協助，將成份穿透至深層的皮膚組織中，以發揮美白的效果。

英文摘要

Osteoarthritis (OA) is also refered to as degenerative arthritis. The pathogenesis of OA so far remains unclear. However, risk factors such as age, physical trauma and overuse of the joints have been linked to the development of OA. Clinically, injection of glucosamine and hyaluronic acid into the damaged joints have been the most common remedy. If the above management is ineffective, joint replacement surgery may be required. In this study, we will examine the pathology of OA from two respects. hPi is a human articular chondrocyte cell line established in our previous study, and their chondrocyte specific features have been well characterized. First, we used IL-1b and TNF-a to create an OA-like cell model and induced OA-related inflammatory response. At the same time, we used PRP to inhibit inflammatory response. On the other hand, we used PRP to promote the regeneration of chondrocytes. Our result showed that IL-1b and TNF-a inhibited the proliferation ability of hPi while PRP recovered it. We found the mRNA levels of Sox9, type II collagen, and aggrecan were all down-regulated when treated with IL-1b/TNF-a and up-regulated by PRP. Under our three-dimensional culture system, neo-cartilage formed in PRP-treatment group showed a higher water content and more intact gross morphology when compared to the IL-1b/TNF-a treated group. In addition, the PRP-treated group demonstrated more prominent lacunae formation and collagen matrix deposition, accompanied by a higher type II collagen expression level and

GAGs accumulation. Collectively, these findings indicated that PRP could promote cartilage regeneration and potentially be an effective agent in the treatment/prevention of OA.