評估幾丁質羥基磷灰石複合支架於骨組織工程應用

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摘要

使用合適生物材料製成的多孔支架在骨組織工程中，能夠輔助組織再生並加速骨骼的修復。其中幾丁質(chitin, CT)具有生物相容性、生物降解性、抗菌性與非抗原性，是生醫領域中頗有潛力的材料；奈米羥基磷灰石(nanohydroxyapatite, nHAp)則擁有良好的引導骨生能力(osteoconductivity)，可促進成骨細胞(osteoblast)增殖及分化；天然色素薑黃素(curcumin, CM)，可抗發炎和抗關節炎，也被證實可以抑制蝕骨細胞(osteoclast)的活性。本報告藉由冷凍乾燥技術製備出 CT/nHAp 複合支架並使其附著 CM，再分析其結構性質與物化特性，評估其應用於骨組織材料的適切性。電子顯微鏡結果顯示支架呈現高度多孔性且遍布大量的羥基磷灰石，傅立葉紅外線光譜也證明 CT、CM 和 nHAp 各成分順利結合，X 光繞射儀的結果則顯示 nHAp 表現了明顯的結晶強度；nHAp 的加入使支架的壓縮機械強度顯著提升，也使膨潤程度有所下降，CM 的附著也讓支架的膨潤比例更進一步降低。綜上所述，支架各項的特性的分析結果皆能支持其在骨組織工程的應用潛力，但我們仍認為未來仍需更廣泛深入的分析來補足研究的完整性。

關鍵字：幾丁質、羥基磷灰石、薑黃素、骨組織工

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