

Pluronic/褐藻醣膠/幾丁聚醣奈米粒包覆薑黃素之特性及癌細胞標靶遞送

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摘要

薑黃素是疏水性的多酚化合物，具有多種生物活性，具有抗氧化、抗發炎、抗癌和抑制微生物等，但易受光照裂解，不易被細胞吸收等缺點限制薑黃素之生物利用度，故希望以生物相容性和可生物降解的聚合物製成的奈米級藥物輸送系統進行藥物遞送和癌細胞標靶運輸。Pluronic F127 為親水段鏈與疏水段鏈所組成的兩親性共聚物，於水中可自行組裝形成內核-殼結構，有利於疏水性藥物的穩定，因此添加 Pluronic F127 形成薑黃素- Pluronic F127 微胞 (micelle)，並將薑黃素- Pluronic F127 微胞包覆於褐藻醣膠/幾丁聚醣奈米粒中，形成薑黃素- Pluronic F127/褐藻醣膠/幾丁聚醣奈米粒。以奈米粒中的褐藻醣膠結構與 P-selectin 的配體上之醣殘基相似的特性，辨識癌症中腫瘤內皮細胞上 P-selectin 受體，使薑黃素可以有效的標靶遞送至癌細胞中，並藉由奈米粒材料之一的幾丁聚醣在不同 pH 緩衝液下的去質子/質子化型態進行奈米粒粒徑的調控。因此本研究透過添加 Pluronic F127 來增加薑黃素的溶解度，並以正電荷的幾丁聚醣與負電荷的褐藻醣膠為材料，藉由靜電交互作用形成奈米粒包覆薑黃素，後續將應用於癌細胞之標靶遞送和抗癌能力。

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