

組織工程用多孔性三鈣磷酸鹽支架之研製

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摘要

目前作為骨骼移植的人工支架材料有許多種類，諸如生物活性玻璃45S5R、氫氧基磷灰石(hydroxyapatite, HAp)、三鈣磷酸鹽(tricalcium phosphate, TCP)和四鈣磷酸鹽(tetracalcium phosphate, TTCP)等。其中，HAp經由不同熱處理條件後會轉變為β-或α-相的TCP；β-TCP降解速率極快，且具有良好的骨細胞引導生長功能，而α-TCP的生物相容性良好、降解性佳，因此皆適合做為骨骼移植之替代材料。本實驗以硬脂酸為成孔劑，添加入鈣磷酸鹽陶瓷中製作多孔性支架材料。經實驗結果顯示，在燒結溫度為T4、T5及T7的環境下，分別出現β-、α-及β-三鈣磷酸鹽結晶相，不同結晶相的鈣磷酸鹽陶瓷支架以掃描式電子顯微鏡(SEM)觀察孔洞結構及孔徑尺寸。最後，經去離子水溶液浸泡後，HAp陶瓷支架沒有明顯的變化，β-TCP/HAp陶瓷支架明顯的觀察到降解的現象，α-TCP/β-TCP/HAp與α-TCP/HAp陶瓷支架則會生成磷灰石。

關鍵詞：鈣磷酸鹽陶瓷、結晶相、支架材料、多孔結構

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