組織工程用多孔性生醫玻璃陶瓷支架之研究

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摘 要

由於外傷、疾病或者手術所造成組織的損壞經常需要進行骨移植，而治療的方式有自體移植、異體移植與異種移植等。人工支架材料可促使骨再生及支撐新生骨，而3D支架材料需有高孔隙度、開放性結構並且能使植入材有適當的血管增生，此外支架材料也需能使養份與排泄物流通。作為引導骨再生的支架用材料中，最常被研究探討的有氫氧基磷灰石、β三鈣磷酸鹽、生物活性玻璃和含有磷灰石與矽灰石的玻璃陶瓷等。本實驗是發展以稻殼作為成孔劑添加到生物活性玻璃陶瓷45S5R中製作多孔性支架材料。實驗結果顯示，玻璃分別經過450℃與1050℃、1小時的結晶熱處理後，主要晶相種類以XRD測定結果為：磷灰石、Na2Ca2Si3O9兩種結晶相。以添加三種不同含量及粒徑大小的稻殼經過1050℃、1小時燒結後，分別利用SEM、阿基米德原理量測孔隙大小、開放型孔隙度。以添加SA75P3的稻殼成孔劑，其大孔隙分別為長軸：600±15 μm 短軸：65±25 μm、開放型孔隙度則為47.2±2.7%。由型態組織觀察的結果顯示，SA75P3試片的孔隙大小分佈、孔隙之互相連通性與表面粗糙度方面都適合作為骨組織工程用的支架材料。

關鍵詞 : 玻璃陶瓷 ; 支架材料 ; 多孔性

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