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• 中文摘要

本計畫利用 Glutaraldehyde 當做交鏈劑，探討膠原蛋白應用於細胞培養上，增加膠原蛋白纖維之間強度的影響性。？1%膠原蛋白溶液以不同濃度 Glutaraldehyde 處理 24 小時。最後膠原蛋白膠體溶液的黏彈性將利用動態機械分析儀(DMA)測量。Voigt-Kelvin 的 Creep compliance model 用來描述這些膠原蛋白膠體溶液的黏彈性。這些經交鏈的膠原蛋白膠體溶液，經過冷凍乾燥法形成厚度在 0.2-0.3mm 的膠原蛋白海棉組織。以 DMA 測膠原蛋白海棉組織的 Break modulus 結果顯示交鏈程度愈高，剛性愈強。由裸鼠皮取出培養的纖維母細胞，分別注入 3*10/sup 5/cells/ml 纖維母細胞於不同濃度的 Glutaraldehyde 膠原蛋白海棉組織，結果顯示 Glutaraldehyde 的濃度高達 0.2%時，膠原蛋白海棉組織仍可與纖維母細胞有很好的相容性。

• 英文摘要

The influence of glutaraldehyde as a crosslinking agent to increase the strength of collagen matrices for cell culture was examined in this study. Collagen solutions of 1% were treated with different concentrations (0%-0.2%) of glutaraldehyde for 24 h. The viscoelasticity of the resulting collagen gel solution was measured using Dynamic Mechanical Analysis (DMA), which demonstrated that all collagen gel solutions examined followed the same model pattern. The creep compliance model of Voigt-Kelvin satisfactorily described the change of viscoelasticity expressed by these collagen gel solutions. These crosslinked collagen gel solutions were freeze-dried to form a matrix with a thickness of about 0.2 to 0.3 mm. The break modulus of these collagen matrices measured by DMA revealed that the higher the degree of crosslinking, the higher the break modulus. The compatibility of fibroblasts isolated from nude mouse skin with these collagen matrices was found to be acceptable at a cell density of 3*10/sup 5/ cells/cm/sup 2/ with

no contraction, even when using a concentration of glutaraldehyde of up to 0.2%.