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• 計畫英文名稱	A Study of Biocompatibility, Biodegradation, and Osteopromotion of Porcine Dermal Collagen Membrane.
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• 中文關鍵字	豬皮膠原蛋白膜；戊二醛；骨質導引再生術
• 英文關鍵字	Porcine dermal collagen membrane (PDCM)；Glutaraldehyde；Guided bone regeneration
• 中文摘要	台北醫學院藥研所於 1992 年自豬皮萃取製得膠原蛋白薄膜,此薄膜雖具有相當之柔韌度,但於操作過程中與器械碰觸時極易破損,故本實驗之第一階段嘗試改良此薄膜型膠原蛋白成海綿型膠原蛋白片,並以不同濃度之戊二醛修飾聚合,再以電子顯微鏡觀察其表面結構之變化。第二階段則將豬皮膠原蛋白薄膜,植入白鼠下顎骨下緣直徑 5mm 之人造骨缺損區,將骨質缺損覆蓋,以觀察膠原蛋白膜應用於骨質導引再生術對骨缺損癒合之影響。實驗結果顯示,於掃描式電子顯微鏡下,海綿型膠原蛋白片主要呈現四種不同類型的結構,分別爲:纖維狀結構、開放式小孔、峽狀孔道、與平面片狀結構;本實驗建議以戊二醛修飾膠原蛋白膜以後,應以磷酸緩衝液浸泡清洗 120 小時,才能完全消除殘留之戊二醛。在應用豬皮膠原蛋白膜於骨質導引再生術方面,手術後第三週,缺損區仍不見新骨形成,未經戊二醛修飾之薄膜此時已爲組織分解。於第六週時,0.01%戊二醛修飾之薄膜此時已爲組織分解成殘餘碎片,僅有少量的類骨質形成;第九週時,組織反應主要爲輕微的慢性發炎反應,有少數新骨之再生,多數膜片此時已完全被吸收,唯 3.00%戊二醛修飾之膜片仍清晰可辨。由此實驗可知,經 3.00%戊二醛修飾之膠原蛋白膜,其分解速率減緩、表面結構更加緻密,較能有效隔離傷口,促進新骨之再生,故將來可能較具實際臨床應用的價值。
• 英文摘要	The collagen membrane extracted from porcine dermis (PDCM) was developed in Taipei Medical college, Graduate Institute of Pharmaceutical Science in 1992. Although it has been proved that PDCM was biocompatible and biodegradable in previous animal study, it was torn down easily during the operation. Owing to that, in the first part of this study, the producing procedure of PDCM was modified and cross-linked with variant concentrations of glutaraldehyde (GA). The surface architecture was then observed under SEM.

In the second part, PDCM was implanted into the lower border of mandible and covered artificial bony defect (5mm in width) in order to examine the healing effect of PDCM on guided bone regeneration (GBR). In the SEM observation, it was indicated that there are four different types of superficial structures: fibrillar, open pores, channels, or sheet-like structures. As concern with the results of GBR technique, there was no histologic evidence of new bone formation in all groups of rats three weeks after surgery. While at six weeks, osteoid structures were noted in some specimen, and the membrane of uncross-linked and 0.01% GA cross-linked groups were degraded completely by that time. At nine weeks, limited amount of regenerated bone around the artificial defects were evident in all specimens, except the control group. In conclusion, as PDCM modified with 3.00% GA, the surface architecture becomes denser and the rate of biodegradation was prolonged. It was suggested that 3.00% GA conditioned PDCM may possess practicable value for osteopromotion in clinical usage.