SACCHACHITIN P10 對於寵物外傷及燙傷之傷口癒合作用

Mode of Action on SACCHACHITIN P10 for Traumatic and Burn Wound of Pets

中文摘要

本研究目的在研發新的 SACCHACHITIN 劑型以方便使用於寵物皮膚外傷。我們以 5%的 CMC 為基質加入 10%的 SACCHACHITIN 製成軟膏狀的成品 SAP10。動物實驗亦證實 SAP10 具有促進傷口癒合的功效。在大白鼠的皮膚生檢傷口癒合實驗以及燙傷實驗，傷口的組織病理變化、傷口面積、生長因子以及基質金屬型蛋白水解?(Matrix metalloproteinease, MMPs) 作為評估的項目。從組織病理以及傷口面積的改變，顯示 SA P-10 可以在癒合各期刺激分泌生長因子包括 PDGF、TGF-β1 以及 VEGF 的表現，同時也能抑制 MMP-9 以及依據分子量推測為 MMP-2 的表現。另外在犬的燙傷實驗，由組織病理變化以及 MMPs 的表現分析，同時支持 SAP10 具有促進傷口癒合的功效。由於具有犬專一性的生長因子檢驗無法購得或製成而無法分析生長因子的表現。

在犬隻及大白鼠實驗中 MMPs 的表現呈現不一致的情況或許和動物種的差異有關，而生長因子不同的表現於大白鼠全層皮膚切除以及燙傷實驗或許和傷口形成的原因有關。

SAP10 具有外型可塑性以及延展性的特性，無論毛髮的干擾均可與傷口充份接觸，也容易以繃帶包紮使敷料穩固於動物傷口，達到治療的目的。

本研究結論為 SAP10 對於全層皮膚切除以及全層皮膚燙傷之傷口具有良好的傷癒合口促進的功效以及臨床使用的方便性。

英文摘要

The aim of the present study was to develop a new type wound dressing derived from SACCHACHITIN to meet the demands of pets. SACCHACHITIN P10 was composed of 10% SACCHACHITIN and 5% Carboxymethyl cellulose sodium salt (CMC). Animal models were employed to confirm the effectiveness of wound healing enhancement of SAP10. Skin biopsy full thickness excision and full thickness thermal burn were created on the back of Wistar rats and size of wound area, histopathological changes, growth factors matrix metalloproteinases (MMPs) contents were measured in the wound areas. The histopathological change and wound area revealed that SAP10 promote growth factors including PDGF, TGF-β1 and VEGF expression and that in good agreement with the healing process of inflammation, proliferation and remodeling in the model of full thickness excision. In the same time the activities of MMP-9 and presumed MMP-2 were found to be suppressed.

In dog, experiment on thermal burn trauma was also carried out. Histopathological

and wound area changes support that SAP10 was effective in accelerating wound healing. Zymographic results demonstrated that SAP10 suppressed MMP-9 and MMP-2 during the whole process of healing. However, growth factors specific for canine were unavailable that this part of data was devoid.

The different expression of MMPs in rat and dog might be because of species difference. The wound type also affected the expression of growth factors in the wound area.

SAP10 was in a viscous and amorphous paste form and it was able to be applied onto the wound of any animal surface with any shape for a stable bandage no matter with hair or not.

In conclusion, SAP10 is an effective wound healing formulation to meet the special demands of pets for full thickness excision and full thickness thermal wound.aluable.