附件四、技術說明表

含抗纖維化物質或化學物的卡波普凝膠於抑制血管內膜增生之應用

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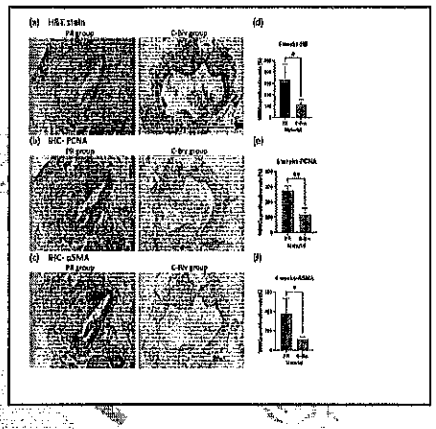

簡　歷：
https://webpageprodvm.ntu.edu.tw/ntudbme/faculty_FengHueiLin.htm?

研　究　成　果：
https://webpageprodvm.ntu.edu.tw/ntudbme/result_FengHueiLin.htm?

歷　年　計　畫：
https://webpageprodvm.ntu.edu.tw/ntudbme/plan_FengHueiLin.htm?

市場及需求:
全台灣接受血管接合手術病人,洗腎廔管約 17000,冠狀動脈繞道 3000 共兩萬人

技術摘要(含成果):
我們將 Carbopol 940 粉末 (0.05~10 克)溶解於去離子水中，製成 50 毫升、濃度為 1%（w/v）的溶液。經過充分均勻混合兩小時後，將溶液置於紫外線照射進行高壓滅菌。我們使用 0.22 微米的膜過濾器過濾了比伐努定溶液（0.5~20 μM）。過濾後，我們按照 1:1 的體積比混合了這兩種溶液。這將形成我們的比伐努定載荷的 Carbopol-940 凝膠。
生物相容性，使用 L929、A7r5 和 HUVEC 細胞系進行細胞毒性測試。三種細胞系對比伐努定凝膠的細胞活性均高於 ISO10993-5 所要求的 70%，並且沒有明顯的細胞毒性。動物實驗，進行大鼠腹部切開，找到腹主動脈，在腹主動脈上面進行 7mm 的縱切，再進行縫合，分為兩組：一組以一般的聚丙烯縫線做單純縫合（縫線組），一組先在切口處塗抹比伐努定凝膠之後再進行縫合（凝膠組），手術後四週犧牲，對主動脈壁組織進行了蘇木精和伊紅染色。通過將手術部位的動脈壁與手術部位外的動脈壁進行對比，估計了主動脈壁厚度的上升率。縫線組的主動脈壁增厚率為 333.3%。與之相比，凝膠組的主動脈壁增厚率為 102.8%。凝膠組的主動脈壁上升率明顯低於縫線組（p=0.0390）

優勢:
目前並沒有近似的商品，也沒有相關研究，在臨床使用上進行縫合前的塗抹，使用上相當簡單，也不影響塗抹後開刀的手感，並有好的成果。

競爭產品:
沒有

專利現況:
(1)本技術研究團隊經由五年研究
(2)還未有任何專利申請

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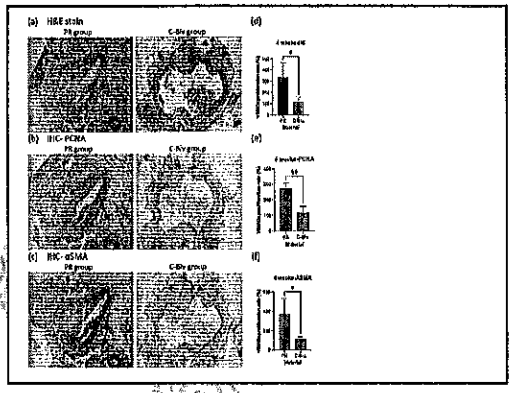
Anti-fibrosis substance or chemicals loaded Carbopol 940 gel in inhibition of neointima hyperplasia



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Experience:

https://www.mc.ntu.edu.tw/ntudbme/Vcard.action?q_type=-1&q_itemCode=829&l=en_US

publications: https://bme.ntu.edu.tw/ntudbmeEN/result_FengHueiLin.html

grants:

https://webpageprodvm.ntu.edu.tw/ntudbme/plan_FengHueiLin.htm?

Market Needs:

In Taiwan, renal failure patients who need receiving arteriovenous shunt were about 17000 people, and coronary artery bypass surgery about 3000 people. The total was twenty thousand people.

Our Technology:

We used a bivalirudin-loaded carbopol 940 gel, which can effectively inhibit platelet aggregation. Bivalirudin possesses thrombin-inhibitory properties and can suppress platelet activation and aggregation. The drug-releasing profile showed that approximately 60% of bivalirudin was released in 24 hours, and the remainder was slowly released after 50 hours. WST-1 assay and live/dead staining results obtained from A7r5, L929, and HUVEC revealed that the gel is not cytotoxic. In the in vivo study, the vessel walls in the group untreated with the gel increased by 233.3% in four weeks, whereas it increased by 2.8% in the group treated with the gel ($p = 0.039$).

Strength:

There are currently no similar products or relevant research. Pre-suturing anastomosis site smear for suturing in clinical use is simple and does not affect the surgical feel after application. The good results of inhibiting intima-hyperplasia are also the benefit.

Competing Products:

none

Intellectual Properties:

(1) We spent five years on this research

(2) Pending patent application

Contact (do not need to fill out):

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