

附件四、技術說明表



抗纖維化物質或化學物包覆聚丙烯縫線

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單位：國立臺灣大學 醫學工程學系/研究所

簡歷：

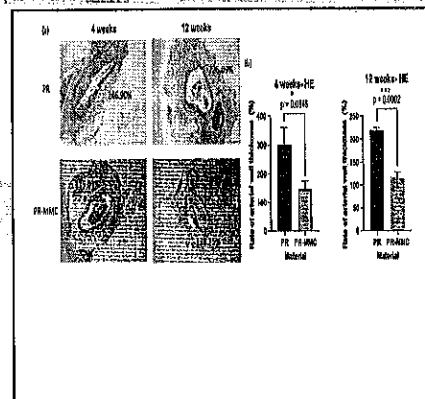
https://webpageprodvm.ntu.edu.tw/ntudbme/faculty_FengHueiLin.htm?

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，洗腎屢管約 17000，冠狀動脈繞道 3000 共兩萬人

技術摘要(含成果)：

以目前的血管縫合手術來說，治療準則只能以抗血小板藥物作為長期控制的方式，以減少術後血管接口處的再狹窄及栓塞，增加長期的暢通率。但有一部分病人因為抗血小板藥物而產生了許多的副作用，像是腸胃道的出血及腦出血。服用此類藥物的病人在要接受手術及拔牙時，也必須承受流血過多的風險，但若是藥物劑量不足，則很容易造成再栓塞。也因此我們想用醫材的發明，減少術後血管內膜增生，避免後續血管狹窄及再栓塞。

我們使用醋酸電漿以及紫外光的方式，將抗纖維化藥物（我們以絲裂黴素作為例子）接枝在單股聚丙烯縫線之上，分析縫線的材質，並進行大鼠的動物實驗，進行腹主動脈縫合實驗，並於四週及十二週進行犧牲，檢體在染色之後證實能夠抑制血管切口處的內膜增生。而絲裂黴素也同時是抗生素，抗癌藥物。我們預期以這樣的技術不僅能夠抑制血管內膜增生，也能夠預防縫合處的感染。

優勢：

目前並沒有近似的商品，只有一般的聚丙烯縫線，聚丙烯的材料結構非常穩定，不易使用藥物包覆，我們所使用的方式能夠很好的包覆縫線，並有好的成果。

競爭產品：

沒有

專利現況：

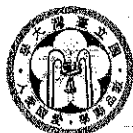
(1) 本技術研究團隊經由五年研究

(2) 還未有任何專利申請

聯絡方式(請不用填)：

臺大產學合作總中心

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Anti-fibrosis substance or chemicals coated polypropylene

PI : Prof. Feng-Huei Lin

Institute of Biomedical Engineering, College of Medicine and
College of Engineering, National Taiwan U.

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 employ acetic acid plasma and ultraviolet light treatments to graft anti-fibrotic drugs (using mitomycin C as an example) onto monofilament polypropylene sutures. We analyze the suture line characteristics and conduct animal experiments on Wistar rats, specifically abdominal aorta longitudinal incision and suture procedures. The sacrificial assessments are at four and twelve weeks. All the specimens were stained by H&E stain and immunohistochemistry stain, the samples demonstrate suppression of neointimal hyperplasia at the vascular incision site. Furthermore, mitomycin C is also an antibiotic and anticancer drug. We anticipate that through this technique, not only can neointimal hyperplasia be restrained, but also the risk of infection at the suture site can be reduced.

Strength:

There is no similar suture line. The polypropylene is a very stable material that makes it hard to modify its surface and graft with medication. Our grafting method, acetic acid plasma and ultraviolet light made a very good surface modified with drugs well coated.

Competing Products:

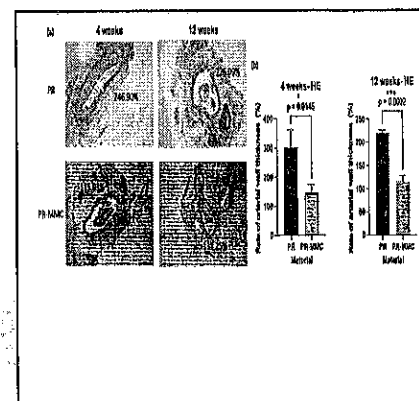
none

Intellectual Properties:

- (1) We spent five years on this research
- (2) Pending patent application

Contact (do not need to fill out):

Center for Industry-Academia Collaboration, NTU
Tel: 02-3366-9945, E-mail: ordiac@ntu.edu.tw



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