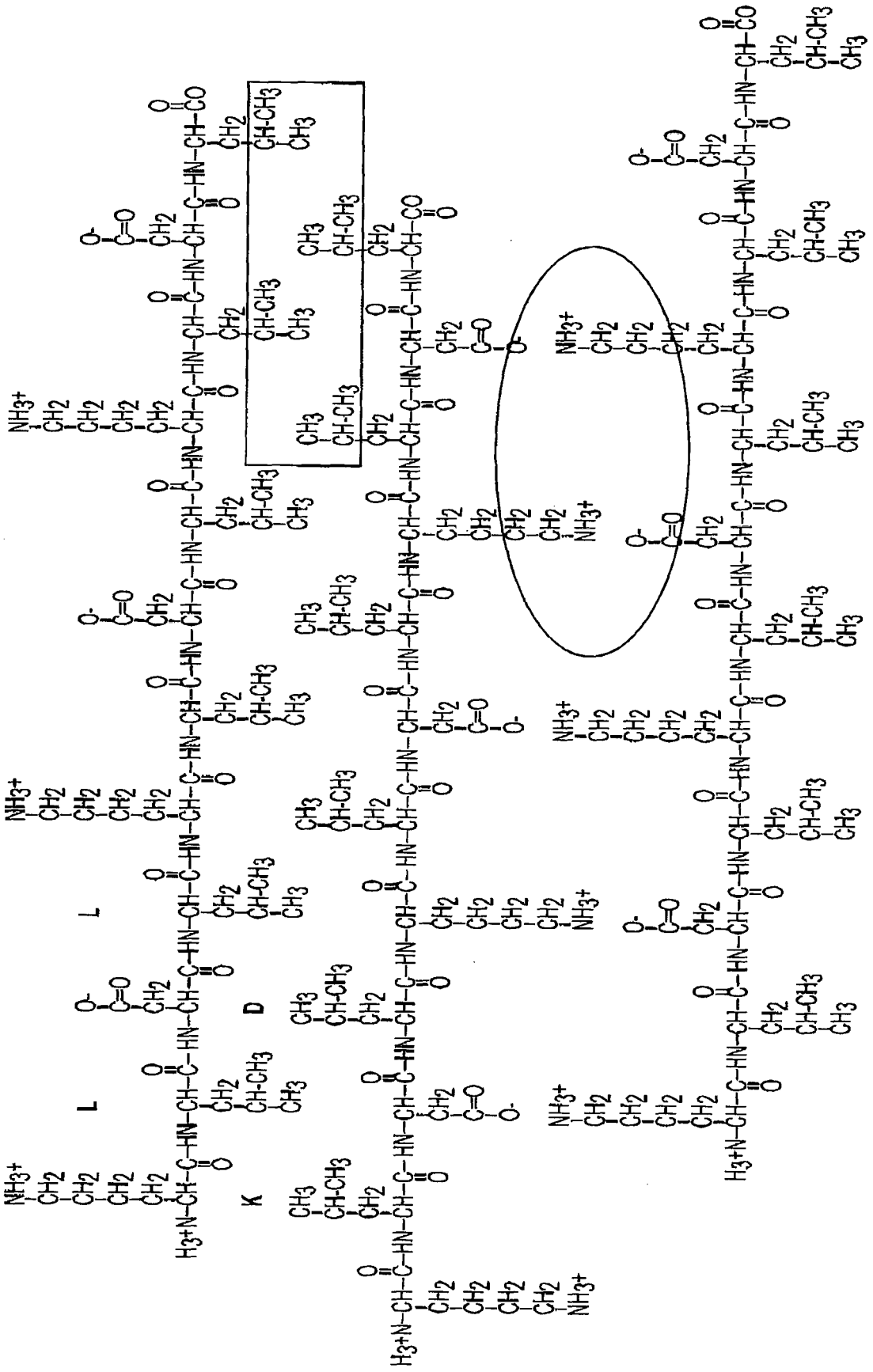
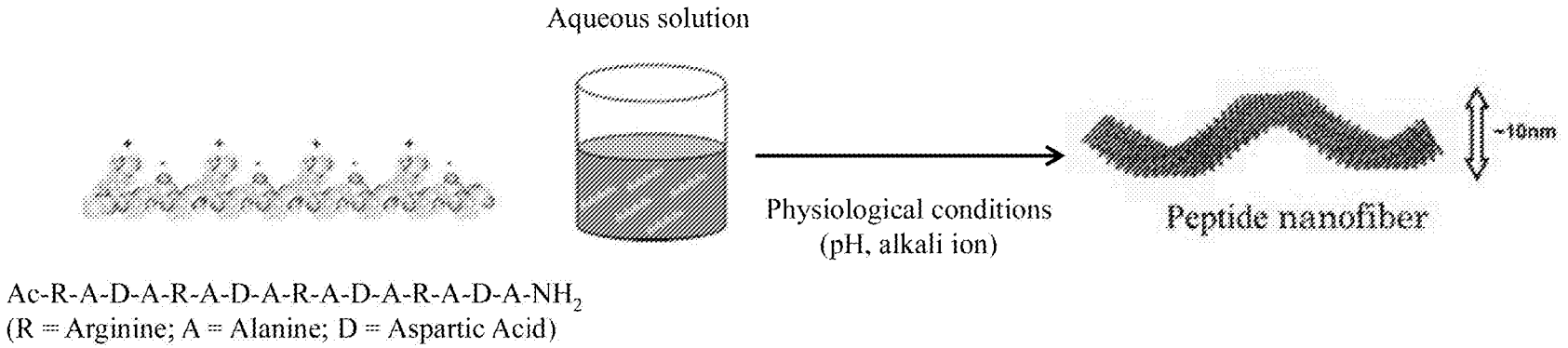


FIG. 1


Aqueous solution
Physiological conditions
(pH, alkali ion)
~10nm
Peptide nanofiber
Ac-R-A-D-A-R-A-D-A-R-A-D-A-R-A-D-A-NH2
(R = Arginine; A = Alanine; D = Aspartic Acid)

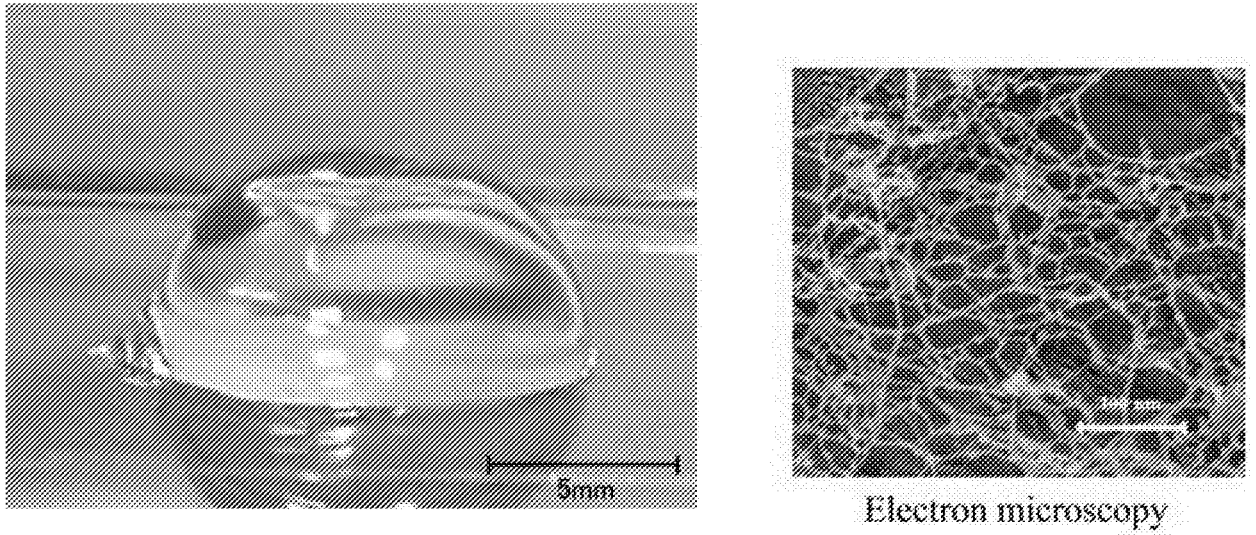
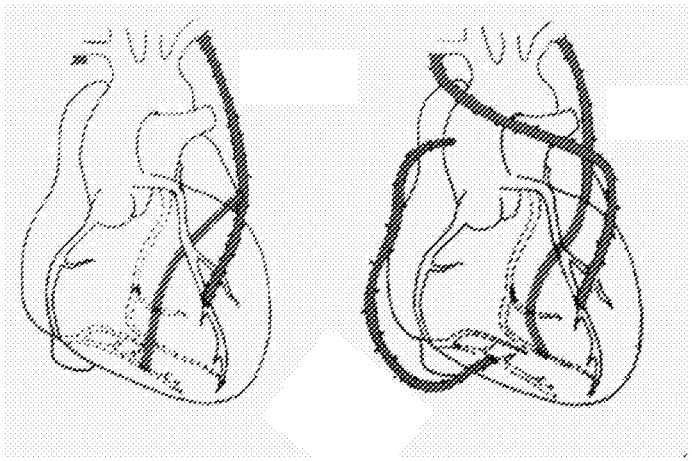

5mm
Electron microscopy

FIG. 2



Thoracotomy and incision of femoral region

↓

Exfoliating internal thoracic artery or collecting great saphenous vein

↓

Heparinization

↓

Cannulate the cannula/tube to the heart and vessels for extracorporeal circulation

↓

Arrest the systemic circulation：(On-Pump)

↓

Angiostomy (vascular anastomosis)

↓

Restart the systemic circulation

FIG. 3

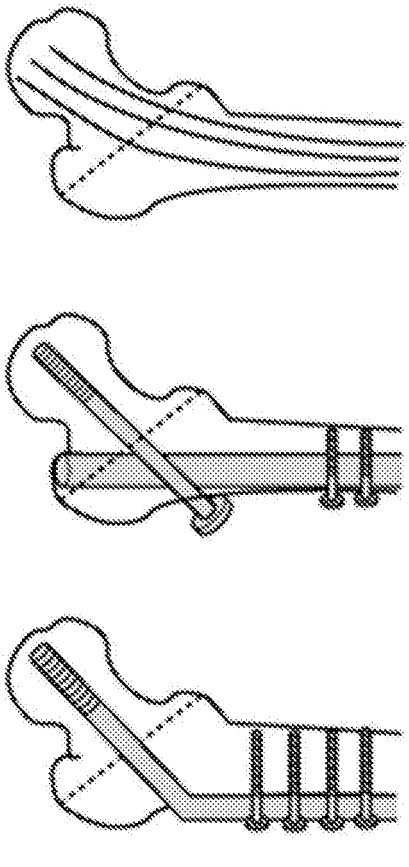


FIG. 4

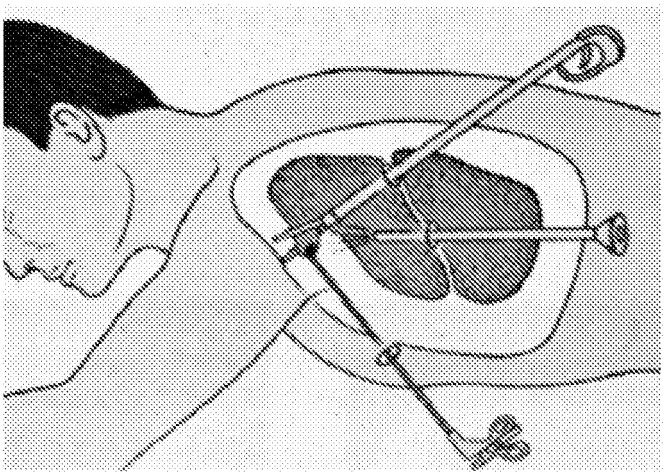


FIG. 5

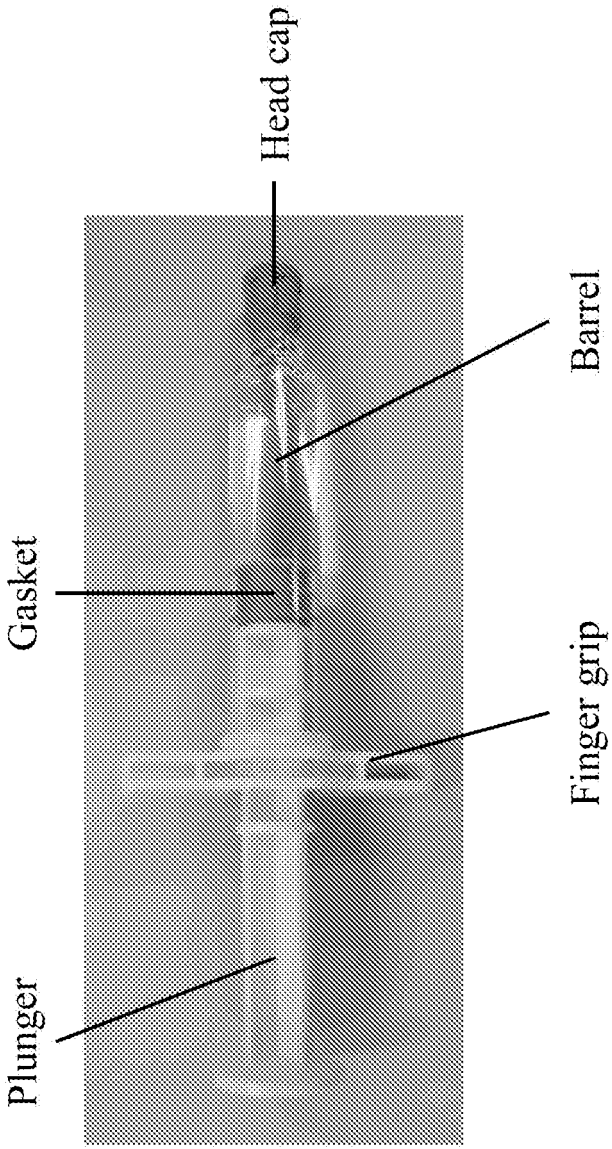


FIG. 6

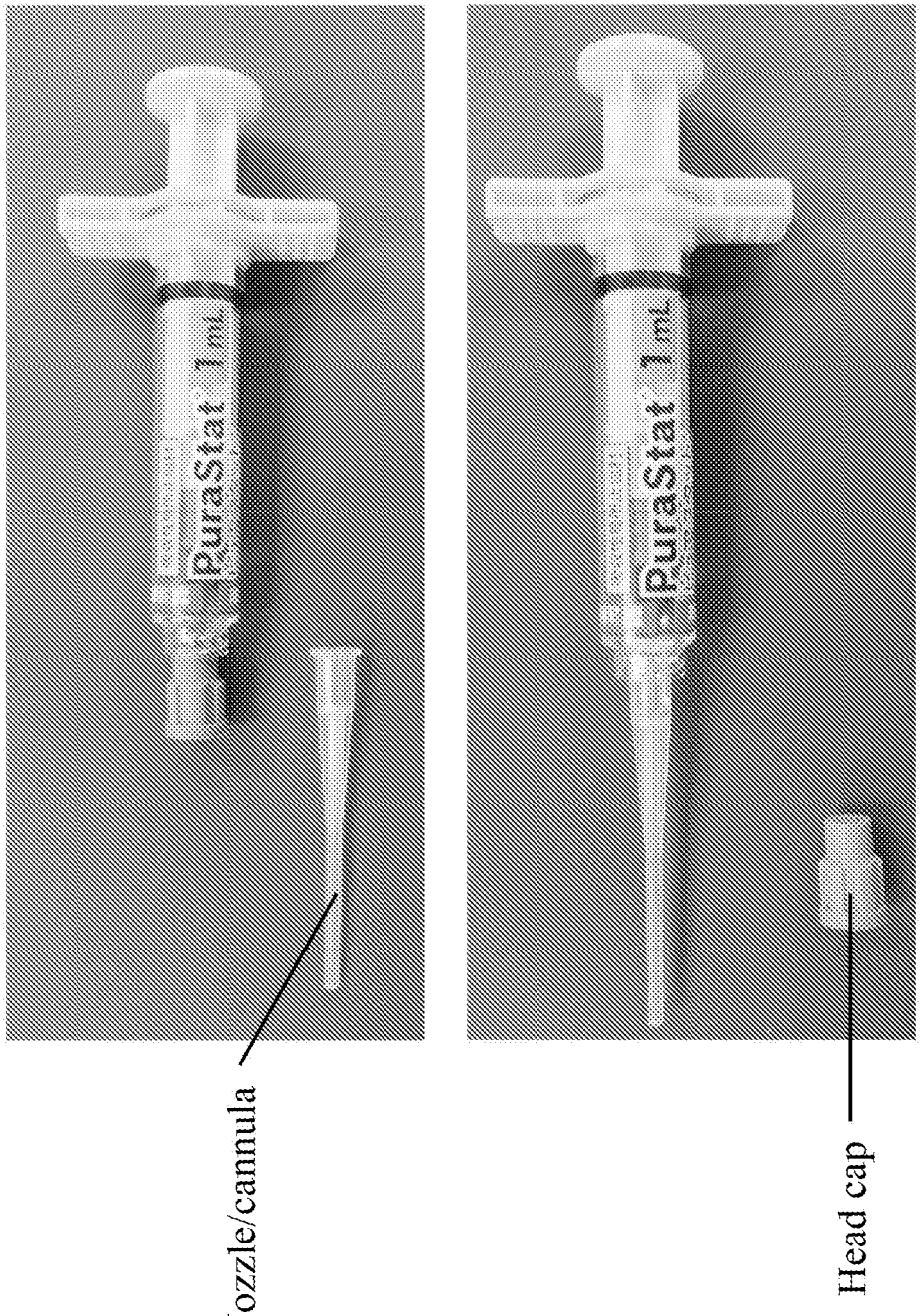
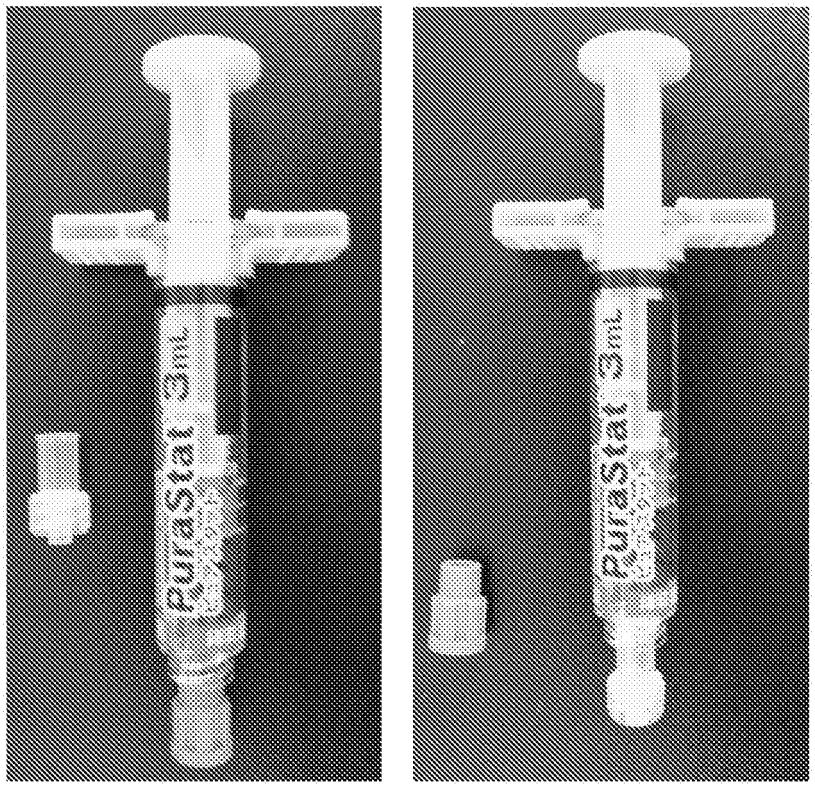
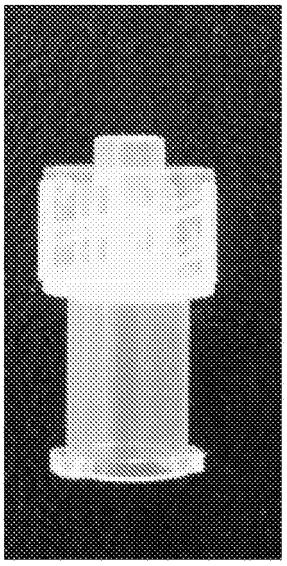


FIG. 7





Syringe connection

Catherer or nozzle/cannula connection

FIG. 8

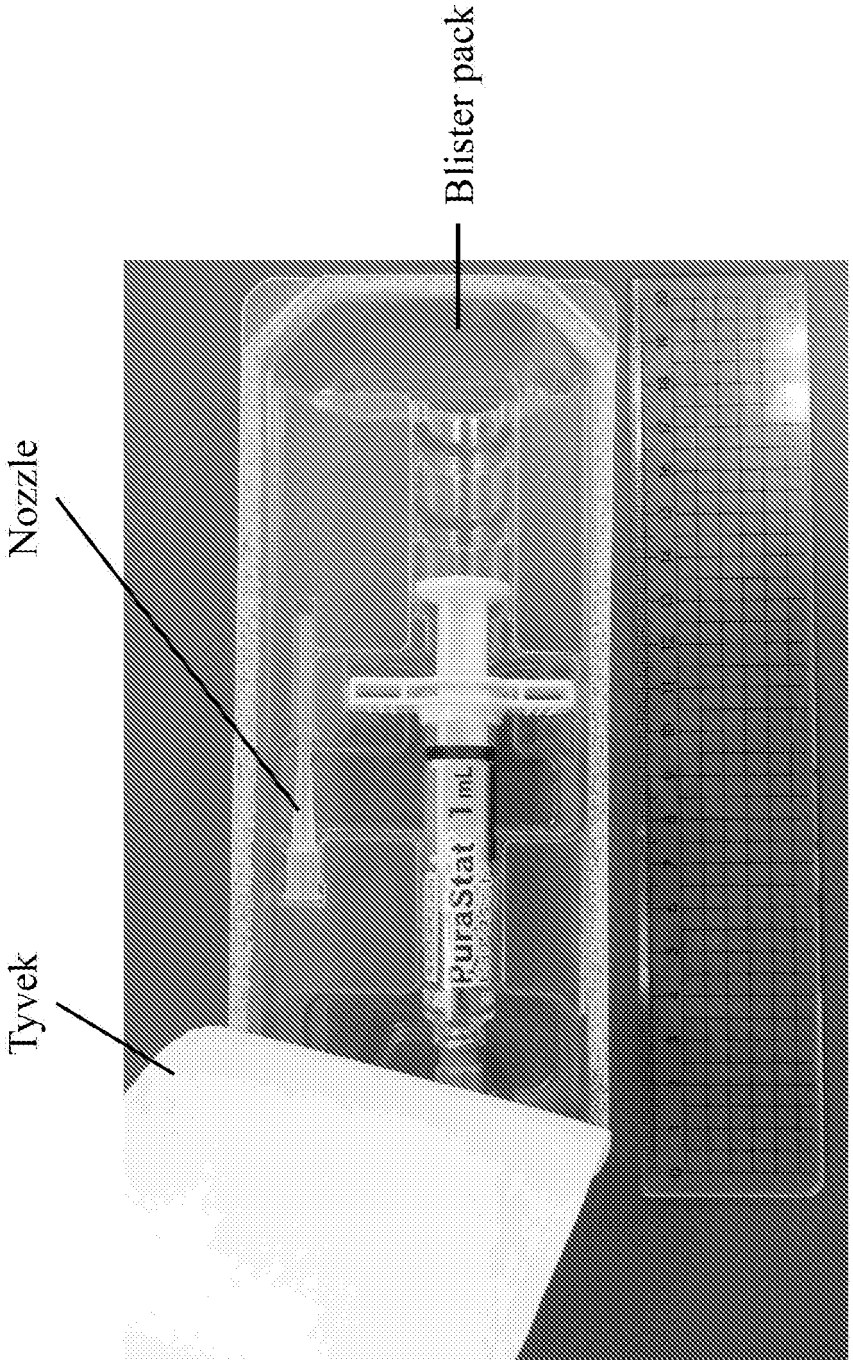


FIG. 9

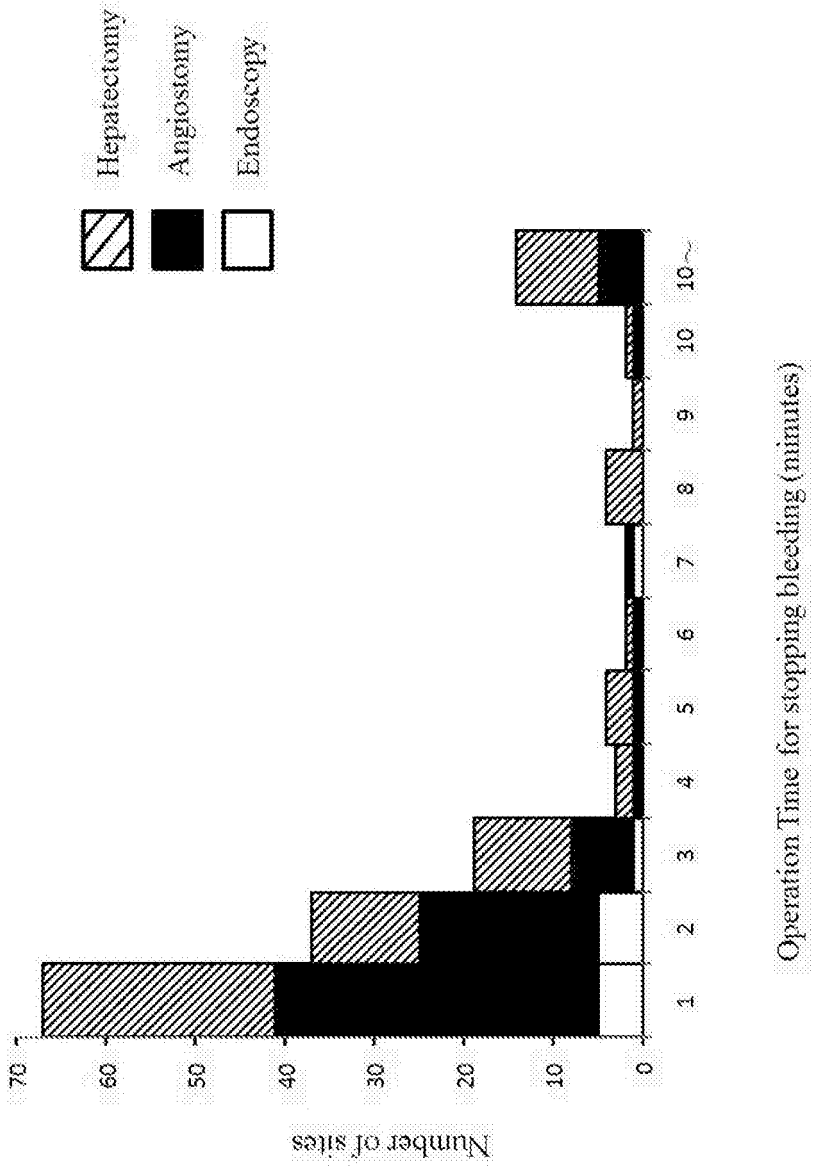

Hepatectomy
Angiostomy
Endoscopy
Number of sites
70
60
50
40
30
20
10
0
1
2
3
4
5
6
7
8
9
10
10~
Operation Time for stopping bleeding (minutes)

FIG. 10