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(54) Title: ENHANCED BIOCOMPATIBILITY COATINGS FOR MEDICAL IMPLANTS

(57) Abstract

Enhanced biocompatibility coatings for medical implants and acute exposure medical devices are disclosed in conjunction with methods for their production and use. The biocompatible coatings are particularly advantageous when used in conjunction with high surface area materials such as porous resins, fabrics and textiles and comprise ionically bound complexes of at least one anticlotting compound and at least one quaternary ammonium compound having greater than 0.15 and less than 40 IU of anticlotting compound per CM^2. The coatings are produced by forming a solution of the complex having a concentration greater than 0.005 % and less than 1.5 % w/v which is applied to the surface and allowed to dry. The coatings reduce the propensity for thrombus deposition without impairing healing and tissue ingrowth into the device.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A61L33/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A61L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 93 21860 A (INTERVASCULAR INC) 11 November 1993 (1993-11-11) page 10, line 4 - page 11, line 20 claims 1,10,11,20-22	1-21
X	WO 93 05825 A (BAXTER INT) 1 April 1993 (1993-04-01) example 1 claims 1-5,9,10,25,26	1-11, 16-21
A	US 5 679 400 A (TUCH RONALD J) 21 October 1997 (1997-10-21) column 6, line 13 - line 15	1,3,4,6, 8,9,17, 19,20

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☒ Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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Name and mailing address of the ISA	Authorized officer
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1

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INTERNATIONAL SEARCH REPORT

Information on patent family members

Inte .ional Application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9321860 A	11-11-1993	US 5383927 A	24-01-1995
WO 9305825 A	01-04-1993	US 5417969 A	23-05-1995
US 5679400 A	21-10-1997	US 5464650 A	07-11-1995
		US 5776184 A	07-07-1998
		EP 0623354 A	09-11-1994
		JP 8033718 A	06-02-1996
		US 5837008 A	17-11-1998
		US 5624411 A	29-04-1997
		US 5824048 A	20-10-1998