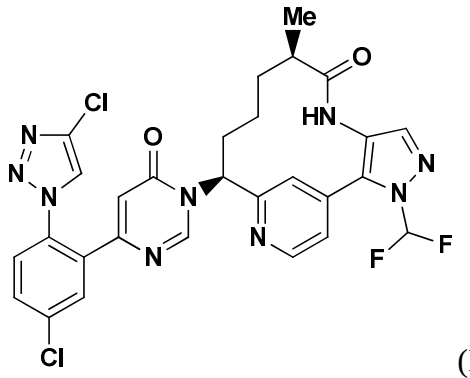
WHAT IS CLAIMED IS:

1. A crystalline form of Compound (I):



(I),

selected from Form A, Form B, Form C, Form D, Form E, Form F, Form G, Form H, Form I, and Form J.

2. The crystalline Form A according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 5.0±0.2, 5.3±0.2, 8.2±0.2, 10.0±0.2, 10.7±0.2, 10.9±0.2, 13.0±0.2, 14.6±0.2, 15.1±0.2, 16.1±0.2, 17.2±0.2, 19.0±0.2, 19.5±0.2, 20.5±0.2, 21.5±0.2, 22.9±0.2, and 24.5±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 1A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1677±2, 1647±2, 1607±2, 1593±2, 1586±2, 1532±2, 1481±2, 1445±2, 1429±2, 1391±2, 1325±2, 1298±2, 1286±2, 1234±2, 1223±2, 1178±2, 1120±2, 1063±2, 1029±2, 1000±2, 983±2, 941±2, 850±2, 832±2, 803±2, 749±2, and 692±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 1B;

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 261 ºC;

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 3;

g) a thermogravimetric analysis (TGA) thermogram substantially as shown in FIG. 4; and/or

h) a dynamic vapor sorption (DVS) isotherm substantially as shown in FIG. 1C.

3. The crystalline Form B according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 5.3±0.2, 9.0±0.2, 9.5±0.2, 10.6±0.2, 11.2±0.2, 13.9±0.2, 14.4±0.2, 14.7±0.2, 16.0±0.2, 16.8±0.2, 17.4±0.2, 18.3±0.2, 19.3±0.2, 20.2±0.2, 20.9±0.2, 21.3±0.2, 23.0±0.2, 23.8±0.2, 25.8±0.2, and 26.1±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 5A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1682±2, 1649±2, 1607±2, 1592±2, 1532±2, 1481±2, 1444±2, 1428±2, 1389±2, 1287±2, 1235±2, 1223±2, 1176±2, 1136±2, 1127±2, 1112±2, 1054±2, 1027±2, 994±2, 983±2, 942±2, 867±2, 850±2, 829±2, 804±2, 749±2, and 690±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 5B;

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 235 ºC; and/or

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 5C.

4. The crystalline Form C according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 8.9±0.2, 10.8±0.2, 13.5±0.2, 13.8±0.2, 19.5±0.2, 19.9±0.2, 20.8±0.2, 21.6±0.2, 21.9±0.2, 22.3±0.2, 24.0±0.2, 25.8±0.2, and 26.6±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 6A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1683±2, 1536±2, 1489±2, 1457±2, 1446±2, 1388±2, 1373±2, 1363±2, 1193±2, 1119±2, 1098±2, 1065±2, 1045±2, 1032±2, 867±2, 842±2, 832±2, 813±2, 802±2, and 738±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 6B;

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 277 ºC; and/or

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 6C.

5. The crystalline Form D according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 4.9±0.2, 5.5±0.2, 6.0±0.2, 10.3±0.2, 10.9±0.2, 13.5±0.2, 15.7±0.2, 18.3±0.2, 18.7±0.2, 19.5±0.2, 20.7±0.2, 21.8±0.2, 22.5±0.2, 23.2±0.2, 24.3±0.2, 25.0±0.2, 25.7±0.2, 26.6±0.2, 28.0±0.2, and 29.0±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 7A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1678±2, 1645±2, 1605±2, 1593±2, 1582±2, 1533±2, 1516±2, 1480±2, 1451±2, 1444±2, 1404±2, 1389±2, 1303±2, 1294±2, 1285±2, 1234±2, 1222±2, 1177±2, 1120±2, 1072±2, 1028±2, 1000±2, 990±2, 983±2, 869±2, 850±2, 832±2, 804±2, 748±2, 708±2, and 692±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 7B.

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 250 ºC; and/or

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 7C.

6. The crystalline Form E according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 4.0±0.2, 6.7±0.2, 7.0±0.2, 7.4±0.2, 9.4±0.2, 11.0±0.2, 12.5±0.2, 14.4±0.2, 14.9±0.2, 15.2±0.2, 18.8±0.2, 19.7±0.2, 20.2±0.2, 21.5±0.2, 22.4±0.2, 23.2±0.2, and 23.7±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 8A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1678±2, 1610±2, 1590±2, 1533±2, 1486±2, 1461±2, 1442±2, 1373±2, 1366±2, 1296±2, 1218±2, 1187±2, 1161±2, 1116±2, 1097±2, 1066±2, 1031±2, 1002±2, 994±2, 941±2, 865±2, 832±2, 803±2, 770±2, 738±2, 694±2, and 651±2 cm^{-1}; and/or

d) an infrared (IR) spectrum substantially as shown in FIG. 8B.

7. The crystalline Form F according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 4.8±0.2, 6.1±0.2, 9.6±0.2, 12.2±0.2, 17.2±0.2, 17.6±0.2, 18.0±0.2, 18.3±0.2, 19.4±0.2, 20.7±0.2, 21.2±0.2, 22.3±0.2, 22.8±0.2, 23.4±0.2, 23.8±0.2, 24.4±0.2, 25.1±0.2, 26.4±0.2, and 28.8±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 9A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1662±2, 1604±2, 1591±2, 1542±2, 1487±2, 1400±2, 1364±2, 1087±2, 1052±2, 1037±2, 1028±2, 876±2, 863±2, 843±2, 839±2, 825±2, 807±2, 697±2, and 688±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 9B;

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 242 ºC; and/or

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 9C.

8. The crystalline Form G according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 4.4±0.2, 6.2±0.2, 10.7±0.2, 12.5±0.2, 13.2±0.2, 16.7±0.2, 17.6±0.2, 18.1±0.2, 18.7±0.2, 19.0±0.2, 19.6±0.2, 20.9±0.2, 21.6±0.2, 22.0±0.2, 23.0±0.2, 23.5±0.2, 24.1±0.2, 24.8±0.2, 25.1±0.2, and 25.4±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 10A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1680±2, 1672±2, 1609±2, 1607±2, 1535±2, 1533±2, 1488±2, 1461±2, 1441±2, 1367±2, 1118±2, 1096±2, 1066±2, 1029±2, 993±2, 866±2, 836±2, 804±2, 738±2, and 694±2 cm^{-1}; and/or

d) an infrared (IR) spectrum substantially as shown in FIG. 10B.

9. The crystalline Form H according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 7.1±0.2, 9.6±0.2, 10.9±0.2, 17.5±0.2, 18.2±0.2, 18.7±0.2, 20.0±0.2, 22.0±0.2, 22.4±0.2, 23.2±0.2, 24.3±0.2, 24.9±0.2, 26.4±0.2, 27.7±0.2, and 29.6±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 11A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1732±2, 1694±2, 1673±2, 1534±2, 1483±2, 1461±2, 1448±2, 1433±2, 1416±2, 1377±2, 1297±2, 1283±2, 1254±2, 1223±2, 1184±2, 1113±2, 1074±2, 1041±2, 1029±2, 1001±2, 873±2, 850±2, 844±2, 831±2, 814±2, 803±2, and 738±2 cm^{-1}; and/or

d) an infrared (IR) spectrum substantially as shown in FIG. 12B.

10. The crystalline Form I according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 7.2±0.2, 9.9±0.2, 11.2±0.2, 15.5±0.2, 16.0±0.2, 18.5±0.2, 19.4±0.2, 20.1±0.2, 20.6±0.2, 22.2±0.2, 22.6±0.2, 24.0±0.2, 24.6±0.2, 25.5±0.2, and 26.4±0.2; and/or

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 12;

11. The crystalline Form J according to claim 1 characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising one or more 2θ values selected from: 7.4±0.2, 9.0±0.2, 11.3±0.2, 11.7±0.2, 12.5±0.2, 14.8±0.2, 15.1±0.2, 15.5±0.2, 16.1±0.2, 17.6±0.2, 18.4±0.2, 18.8±0.2, 19.3±0.2, 23.3±0.2, 24.4±0.2, 26.2±0.2, 26.6±0.2, 27.7±0.2, 28.2±0.2, and 28.8±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 13A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1678±2, 1610±2, 1584±2, 1536±2, 1525±2, 1486±2, 1462±2, 1412±2, 1392±2, 1371±2, 1346±2, 1296±2, 1286±2, 1234±2, 1223±2, 1196±2, 1165±2, 1114±2, 1099±2, 1078±2, 1065±2, 1052±2, 1034±2, 999±2, 867±2, 858±2, 841±2, 833±2, 814±2, 800±2, 789±2, 736±2, 703±2, and 694±2 cm^{-1}; and/or

d) an infrared (IR) spectrum substantially as shown in FIG. 13B;

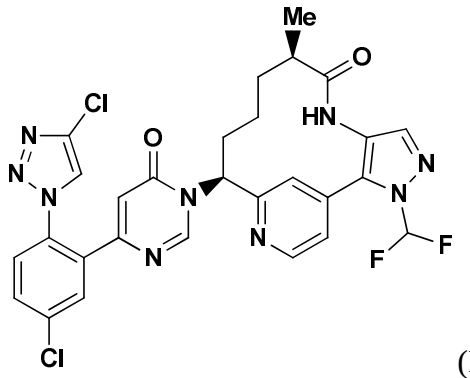
e) a differential scanning calorimetry (DSC) thermogram having an onset temperature at about 266 ºC;

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 13C;

g) a thermogravimetric analysis (TGA) thermogram substantially as shown in FIG. 13D; and/or

h) a dynamic vapor sorption (DVS) isotherm substantially as shown in FIG. 13E.

12. A crystalline form of Compound (I):



(I),

characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising two or more 2θ values selected from: 4.8±0.2, 6.1±0.2, 9.6±0.2, 12.2±0.2, 17.2±0.2, 17.6±0.2, 18.0±0.2, 18.3±0.2, 19.4±0.2, 20.7±0.2, 21.2±0.2, 22.3±0.2, 22.8±0.2, 23.4±0.2, 23.8±0.2, 24.4±0.2, 25.1±0.2, 26.4±0.2, and 28.8±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 9A;

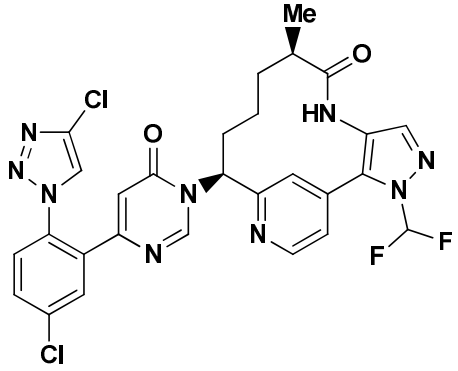
c) an infrared (IR) spectrum having one or more peaks selected from: 1662±2, 1604±2, 1591±2, 1542±2, 1487±2, 1400±2, 1364±2, 1087±2, 1052±2, 1037±2, 1028±2, 876±2, 863±2, 843±2, 839±2, 825±2, 807±2, 697±2, and 688±2 cm^{-1};

d) an infrared (IR) spectrum substantially as shown in FIG. 9B;

e) a differential scanning calorimetry (DSC) thermogram having an endothermic peak at about 242 ºC; and/or

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 9C.

13. A crystalline form of Compound (I):



(I),

characterized by at least one of the following:

a) a powder x-ray diffraction pattern comprising two or more 2θ values selected from: 7.4±0.2, 9.0±0.2, 11.3±0.2, 11.7±0.2, 12.5±0.2, 14.8±0.2, 15.1±0.2, 15.5±0.2, 16.1±0.2, 17.6±0.2, 18.4±0.2, 18.8±0.2, 19.3±0.2, 23.3±0.2, 24.4±0.2, 26.2±0.2, 26.6±0.2, 27.7±0.2, 28.2±0.2, and 28.8±0.2;

b) an observed powder x-ray diffraction pattern substantially as shown in FIG. 13A;

c) an infrared (IR) spectrum having one or more peaks selected from: 1678±2, 1610±2, 1584±2, 1536±2, 1525±2, 1486±2, 1462±2, 1412±2, 1392±2, 1371±2, 1346±2, 1296±2, 1286±2, 1234±2, 1223±2, 1196±2, 1165±2, 1114±2, 1099±2, 1078±2, 1065±2, 1052±2, 1034±2, 999±2, 867±2, 858±2, 841±2, 833±2, 814±2, 800±2, 789±2, 736±2, 703±2, and 694±2 cm^{-1}; and/or

d) an infrared (IR) spectrum substantially as shown in FIG. 13B;

e) a differential scanning calorimetry (DSC) thermogram having an onset temperature at about 266 ºC;

f) a differential scanning calorimetry (DSC) thermogram substantially as shown in FIG. 13C;

g) a thermogravimetric analysis (TGA) thermogram substantially as shown in FIG. 13D; and/or

h) a dynamic vapor sorption (DVS) isotherm substantially as shown in FIG. 13E.

14. A pharmaceutical composition comprising a crystalline form of Compound (I) of any one of claims 1 to 13, and a pharmaceutically acceptable carrier or diluent.

15. Use of a crystalline form of Compound (I) of any one of claims 1 to 13 in the manufacture of a medicament for treating thrombosis in a mammal in need thereof, wherein a therapeutically effective amount of the crystalline form of Compound (I) is to be administered to the mammal.

16. A crystalline form of Compound (I) of any one of claims 1 to 13 for use in therapy.