~~WHAT IS~~ CLAIM~~ED I~~S:

1. A method for determining a dosing prescription for a medicament in a patient ~~undergoing CRRT~~, wherein the patient has undergone CRRT and has been administered with a fluorescent agent in the bloodstream and has been administered with at least one dose of the medicament, ~~the method comprising:~~

~~administering to the bloodstream of the patient a fluorescent agent;~~

~~administering to the patient at least one dose of the medicament wherein administering~~ the fluorescent agent and the medicament having been administered to the patient ~~is~~ either sequentially or simultaneously~~;~~,

and further wherein the patient continued ~~performing~~ CRRT ~~on the patient~~ after having been ~~administering~~ administered with the fluorescent agent and the at least one dose of the medicament ~~to the patient~~,~~;~~ the method comprising:

exposing the fluorescent agent to visible or infrared light, thereby causing spectral energy to emanate from the fluorescent agent;

monitoring transcutaneously a change in the spectral energy from the fluorescent agent over a period of time;

correlating a change in intensity of the spectral energy from the fluorescent agent to a clearance rate of the fluorescent agent from the bloodstream in the patient;

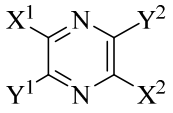
~~calculating~~ correlating a clearance rate of the medicament in the patient ~~based on~~ to the clearance rate of the fluorescent agent;

determining a~~n amount~~ concentration of the medicament in the bloodstream of the patient as a function of time based on the clearance rate of the ~~medicament~~ fluorescent agent; and

adjusting the dosing prescription of the medicament to the patient based on the ~~amount~~ concentration of the medicament in the bloodstream of the patient as a function of time thereby determining the dosing prescription for the medicament to the patient.

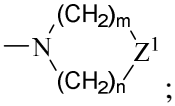
~~2. The method according to claim 1, wherein the fluorescent agent is removed from the bloodstream of the patient by glomerular filtration.~~

~~3~~2. The method according to claim 1, wherein the fluorescent agent is a compound of Formula I, wherein:


Formula I

wherein each of X^1 and X^2 is independently –CN, $–CO_2R^1$, $–CONR^1R^2$, –CO(AA), –CO(PS) or –CONH(PS);

each of Y^1 and Y^2 is independently selected from the group consisting of $–NR^1R^2$ and


;

Z^1 is a single bond, $–CR^1R^2–$, –O–, $–NR^1–$, $–NCOR^1–$, –S–, –SO–, or $–SO_2–$; each of R^1 to R^2 are independently selected from the group consisting of H, $–CH_2(CHOH)_aH$, $–CH_2(CHOH)_aCH_3$, $–CH_2(CHOH)_aCO_2H$, $–(CHCO_2H)_aCO_2H$, $–(CH_2CH_2O)_cH$, $–(CH_2CH_2O)_cCH_3$, $–(CH_2)_aSO_3H$, $–(CH_2)_aSO_3^-$, $–(CH_2)_aSO_2H$, $–(CH_2)_aSO_2^-$, $–(CH_2)_aNHSO_3H$, $–(CH_2)_aNHSO_3^-$, $–(CH_2)_aNHSO_2H$, $–(CH_2)_aNHSO_2^-$,$–(CH_2)_aPO_4H_3$, $–(CH_2)_aPO_4H_2^-$, $–(CH_2)_aPO_4H^{2-}$, $–(CH_2)_aPO_4^{3-}$, $–(CH_2)_aPO_3H_2$, $–(CH_2)_aPO_3H^-$, and $–(CH_2)_aPO_3^{2-}$;

(AA) comprises one or more amino acids selected from the group consisting of natural and unnatural amino acids, linked together by peptide or amide bonds and each instance of (AA) may be the same or different than each other instance;

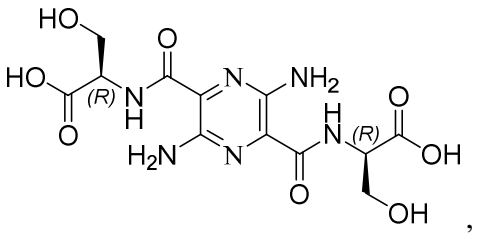
(PS) is a sulfated or non-sulfated polysaccharide chain that includes one or more monosaccharide units connected by glycosidic linkages;

'a' is a number from 0 to 10,

'c' is a number from 1 to 100, and

each of 'm' and 'n' are independently a number from 1 to 3.

43. The method according to claim ~~3~~2, wherein the compound of Formula I is


,

or a pharmaceutically acceptable salt thereof.

~~5~~4. The method according to claim 1, wherein exposing the fluorescent agent to visible or infrared light ~~comprises~~ is performed by a renal monitoring assembly placed ~~: placing a renal monitoring assembly~~ on a body surface of the patient,~~; and~~

wherein the renal monitoring assembly comprises a light source and a data processing system and is configured to detect spectral energy and process data indicative of the spectral energy.

~~6~~5. A method for monitoring a clearance rate of a medicament in a patient, ~~undergoing CRRT~~ wherein the patient has undergone CRRT and has been administered with a fluorescent agent in the bloodstream and has been administered with at least one dose of the medicament, ~~the method comprising:~~

~~administering to the bloodstream of the patient a fluorescent agent;~~

~~administering to the patient at least one dose of the medicament wherein administering~~ the fluorescent agent and the medicament having been administered to the patient ~~is~~ either sequentially or simultaneously;

~~performing~~ and further wherein the patient continued CRRT ~~on the patient~~ after ~~administering~~ having been administered with the fluorescent agent and the at least one dose of the medicament ~~to the patient~~,~~;~~ the method comprising:

exposing the fluorescent agent to visible or infrared light, thereby causing spectral energy to emanate from the fluorescent agent;

monitoring transcutaneously a change in spectral energy from the fluorescent agent over a period of time;

correlating a change in intensity of the spectral energy from the fluorescent agent to a clearance rate of the fluorescent agent from the bloodstream in the patient;

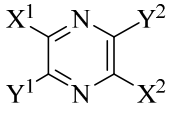
~~calculating~~ correlating a clearance rate of the medicament in the patient to the clearance rate of the fluorescent agent; and

determining a~~n amount~~ concentration of the medicament in the bloodstream of the patient as a function of time based on the clearance rate of the ~~medicament~~ fluorescent agent, thereby monitoring the ~~amount~~ concentration of the medicament in the bloodstream of the patient.

~~7~~6. The method of claim ~~6~~5, the method further comprising

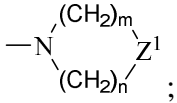
adjusting a dosing prescription of the medicament to the patient based on the ~~amount~~ concentration of the medicament in the bloodstream of the patient as a function of time.

~~8~~7. The method according to claim ~~6~~5, wherein the fluorescent agent is a compound of Formula I, wherein:


Formula I

wherein each of X^1 and X^2 is independently –CN, $–CO_2R^1$, $–CONR^1R^2$, –CO(AA), –CO(PS) or –CONH(PS);

each of Y^1 and Y^2 is independently selected from the group consisting of $–NR^1R^2$ and


;

Z^1 is a single bond, $–CR^1R^2–$, –O–, $–NR^1–$, $–NCOR^1–$, –S–, –SO–, or $–SO_2–$; each of R^1 to R^2 are independently selected from the group consisting of H, $–CH_2(CHOH)_aH$, $–CH_2(CHOH)_aCH_3$, $–CH_2(CHOH)_aCO_2H$, $–(CHCO_2H)_aCO_2H$, $–(CH_2CH_2O)_cH$, $–(CH_2CH_2O)_cCH_3$, $–(CH_2)_aSO_3H$, $–(CH_2)_aSO_3^-$, $–(CH_2)_aSO_2H$, $–(CH_2)_aSO_2^-$, $–(CH_2)_aNHSO_3H$, $–(CH_2)_aNHSO_3^-$, $–(CH_2)_aNHSO_2H$, $–(CH_2)_aNHSO_2^-$,$–(CH_2)_aPO_4H_3$, $–(CH_2)_aPO_4H_2^-$, $–(CH_2)_aPO_4H^{2-}$, $–(CH_2)_aPO_4^{3-}$, $–(CH_2)_aPO_3H_2$, $–(CH_2)_aPO_3H^-$, and $–(CH_2)_aPO_3^{2-}$;

(AA) comprises one or more amino acids selected from the group consisting of natural and unnatural amino acids, linked together by peptide or amide bonds and each instance of (AA) may be the same or different than each other instance;

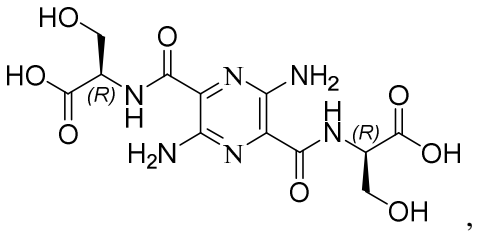
(PS) is a sulfated or non-sulfated polysaccharide chain that includes one or more monosaccharide units connected by glycosidic linkages;

'a' is a number from 0 to 10,

'c' is a number from 1 to 100, and

each of 'm' and 'n' are independently a number from 1 to 3.

~~9~~8. The method according to claim ~~8~~7, wherein the compound of Formula I is



or a pharmaceutically acceptable salt thereof.

~~10~~9. The method according to claim ~~6~~5, wherein exposing the fluorescent agent to visible or infrared light ~~comprises:~~ is performed by ~~placing~~ a renal monitoring assembly placed on a body surface of the patient; ~~and~~

wherein the renal monitoring assembly comprises a light source and a data processing system and is configured to detect spectral energy and process data indicative of the spectral energy.

~~11. A method for determining if a patient undergoing CRRT is receiving a therapeutically effective dose of a medicament for a therapeutically effective time period, the method comprising:~~

~~administering to the bloodstream of the patient a fluorescent agent;~~

~~administering to the patient at least one dose of the medicament wherein administering the fluorescent agent and the medicament to the patient is either sequential or simultaneous;~~

~~performing CRRT on the patient after administering the fluorescent agent to the patient;~~

~~exposing the fluorescent agent to visible or infrared light, thereby causing spectral energy to emanate from the fluorescent agent;~~

~~monitoring transcutaneously a change in spectral energy from the fluorescent agent over a period of time;~~

~~correlating a change in intensity of the spectral energy from the fluorescent agent to a clearance rate of the fluorescent agent from the bloodstream in the patient;~~

~~calculating a clearance rate of the medicament in the patient to the clearance rate of the fluorescent agent;~~

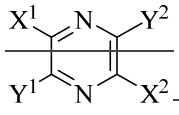
~~determining a concentration of the medicament in the bloodstream of the patient as a function of time based on the clearance rate of the medicament thereby monitoring an amount of the medicament in the bloodstream of the patient as a function of time; and~~

comparing the amount of the medicament in the bloodstream of the patient at a specific time point to a predetermined therapeutically effective concentration thereby determining if the patient is receiving a therapeutically effective dose of the medicament for a therapeutically effective time period.

12. The method according to claim 11, wherein when the concentration of the medicament is below the predetermined therapeutically effective concentration, the method further comprises:

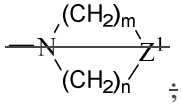
administering at least one additional dose of the medicament to the patient.

13. The method according to claim 11, wherein the fluorescent agent is a compound of Formula I, wherein:

 Formula I

wherein each of X^1 and X^2 is independently –CN, $-CO_2R^1$, $-CONR^1R^2$, –CO(AA), –CO(PS) or –CONH(PS);

each of Y^1 and Y^2 is independently selected from the group consisting of NR^1R^2 and

;

Z^1 is a single bond, CR^1R^2, O, NR^1, $NCOR^1$, S, SO, or SO_2; each of R^1 to R^2 are independently selected from the group consisting of H, $-CH_2(CHOH)_aH$, $-CH_2(CHOH)_aCH_3$, $-CH_2(CHOH)_aCO_2H$, $-(CHCO_2H)_aCO_2H$, $-(CH_2CH_2O)_eH$, $-(CH_2CH_2O)_eCH_3$, $-(CH_2)_aSO_3H$, $-(CH_2)_aSO_3^-$, $-(CH_2)_aSO_2H$, $-(CH_2)_aSO_2^-$, $-(CH_2)_aNHSO_3H$, $-(CH_2)_aNHSO_3^-$, $-(CH_2)_aNHSO_2H$, $-(CH_2)_aNHSO_2^-$, $-(CH_2)_aPO_4H_3$, $-(CH_2)_aPO_4H_2^-$, $-(CH_2)_aPO_4H^{2-}$, $-(CH_2)_aPO_4^{3-}$, $-(CH_2)_aPO_3H_2$, $-(CH_2)_aPO_3H^-$, and $-(CH_2)_aPO_3^{2-}$;

(AA) comprises one or more amino acids selected from the group consisting of natural and unnatural amino acids, linked together by peptide or amide bonds and each instance of (AA) may be the same or different than each other instance;

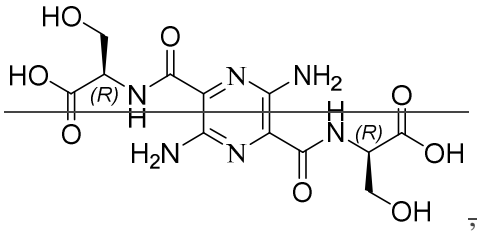
(PS) is a sulfated or non-sulfated polysaccharide chain that includes one or more monosaccharide units connected by glycosidic linkages;

~~'a' is a number from 0 to 10,~~

~~'c' is a number from 1 to 100, and~~

~~each of 'm' and 'n' are independently a number from 1 to 3.~~

~~14. The method according to claim 13, wherein the compound of Formula I is~~



~~or a pharmaceutically acceptable salt thereof.~~

~~15. The method according to claim 11, wherein exposing the fluorescent agent to visible or infrared light comprises:~~

~~placing a renal monitoring assembly on a body surface of the patient; and~~

~~wherein the renal monitoring assembly comprises a light source and a data processing system and is configured to detect spectral energy and process data indicative of the spectral energy.~~