CLAIMS

[Claim 1]. A process for preparing an iron complex compound comprising the steps of

(i) obtaining an iron preparation from iron pentacarbonyl, wherein the iron preparation comprises iron in a form selected from a water-soluble iron salt, an iron hydroxide, an iron oxide-hydroxide, and a mixture of two or more thereof, wherein
- the amount of arsenic in the iron preparation does not exceed 4.5 µg per g of iron, and
- the amount of lead in the iron preparation does not exceed 1.5 µg per g of iron;

(ii) reacting the iron preparation with a ligand in the presence of water so as to form the iron complex compound;

(iii) recovering said iron complex compound; and

(iv) forming said iron complex compound for parenteral administration.

[Claim 2]. The process of claim 1, wherein
- the amount of cadmium in the iron preparation does not exceed 0.6 µg per g of iron, and
- the amount of mercury in the iron preparation does not exceed 0.9 µg per g of iron.

[Claim 3]. The process of claim 1, wherein
- the amount of chromium in the iron preparation does not exceed 330 µg per g of iron.

[Claim 4]. The process of claim 1, wherein the amount of aluminum in the iron preparation does not exceed 200 µg per g of iron.

[Claim 5]. The process of claim 1, wherein the iron complex compound is an iron carbohydrate complex compound.

[Claim 6]. The process of claim 5, wherein, optionally, the content of reducing aldehyde groups in the carbohydrate that serves as ligand in the iron complex

compound has been reduced by oxidation, hydrogenation, or a combination of both.

[Claim 7]. The process of claim 5, wherein the iron carbohydrate complex compound is selected from iron carboxymaltose, iron polyglucose sorbitol carboxymethyl ether complex iron hydrogenated dextran, iron sucrose, iron gluconate, iron polymaltose, iron dextran, iron hydrogenated oligosaccharides iron hydroxyethyl starch, iron dextran glucoheptonic acid and a mixture of two or more thereof.

[Claim 8]. The process of claim 7, wherein said iron hydrogenated oligosaccharides comprise iron hydrogenated oligoisomaltose.

[Claim 9]. The process of claim 1, wherein step (ii) comprises heating said iron preparation and ligand in the presence of water to boiling.

[Claim 10]. The process of claim 1, wherein in step (iv) said iron complex compound is formulated to be administered to a non-human animal.

[Claim 11]. The process of claim 1, wherein in step (iv) said formulation is for subcutaneous injection, intramuscular injection, intravenous injection, or intravenous infusion.

[Claim 12]. A process for preparing an iron complex compound comprising the steps of

(i) obtaining an iron preparation by extracting an aqueous iron salt solution with an organic solvent, wherein the iron preparation comprises iron selected from a water soluble iron salt, an iron hydroxide, an iron oxide-hydroxide, and a mixture of two or more thereof, wherein
   - the amount of arsenic in the iron preparation does not exceed 4.5 µg per g of iron, and
   - the amount of lead in the iron preparation does not exceed 1.5 µg per g of iron;

(ii) reacting the iron preparation with a ligand in the presence of water so as to form the iron complex compound;

(iii) recovering said iron complex compound.

[Claim 13]. The process of claim 12, further comprising formulating the iron complex compound for administration.

[Claim 14]. The process of claim 13, wherein said formulation is for parenteral administration, subcutaneous injection, intramuscular injection, intravenous injection, or intravenous infusion.

[Claim 15]. The process of claim 12, wherein the amount of cadmium in the iron preparation does not exceed 0.6 µg per g of iron, and the amount of mercury in the iron preparation does not exceed 0.9µg per g of iron.

[Claim 16]. The process of claim 12, wherein the amount of chromium in the iron preparation does not exceed 330 µg per g of iron.

[Claim 17]. The process of claim 12, wherein the amount of aluminum in the iron preparation does not exceed 200 µg per g of iron.

[Claim 18]. The process of claim 12, wherein the iron complex compound is an iron carbohydrate complex compound.

[Claim 19]. The process of claim 18, wherein the content of reducing aldehyde groups in the carbohydrate that serves as a ligand in the iron complex compound has been reduced by oxidation , hydrogenation or a combination of both.

[Claim 20]. The process of claim 18, wherein the iron carbohydrate complex compound is selected from iron carboxymaltose, iron polyglucose sorbitol carboxymethyl ether complex, iron hydrogenated dextran, iron sucrose, iron gluconate, iron polymaltose, iron dextran, iron hydrogenated oligosaccharides, iron hydroxyethyl starch, iron dextran glucoheptonic acid and a mixture of two or more thereof.

[Claim 21]. The process of claim 20, wherein said iron hydrogenated oligosaccharides comprise iron hydrogenated oligoisomaltose or iron hydrogenated dextran.

[Claim 22]. The process of claim 21, wherein the carbohydrate component of said iron hydrogenated oligoisomaltose or iron hydrogenated dextran has a weight average molecular weight (Mw) of 500 to 80,000 Da.

[Claim 23]. The process of claim 21, wherein the apparent molecular weight of said iron hydrogenated oligoisomaltose is between 20,000 to 400,000 Da.

[Claim 24]. The process of claim 21, wherein the iron hydrogenated oligoisomaltose has the formula:

$\{FeO_{(1-3X)}(OH)_{(1+3X)}(C_6H_5O_7^{3-})_X\}$, $(H_2O)_T$, $(C_6H_{10}O_6)_R(-C_6H_{10}O_5-)_Z(C_6H_{13}O_5)_R$, $(NaCl)_Y$

wherein X is about 0.031, T is about 0.25, R is about 0.14, Z is about 0.49 and Y is about 0.14.

[Claim 25]. The process of claim 12, wherein step (iii) comprises heating said iron preparation and ligand in the presence of water to boiling.