CLAIMS

1.- An injectable intramuscular depot composition suitable for forming an in situ solid implant in a body, comprising a drug which is paliperidone and/or its pharmaceutical acceptable salts in any combination thereof, a biocompatible copolymer based on lactic and glycolic acid having a monomer ratio of lactic to glycolic acid in the range from 45:55 to 55:45 and DMSO as solvent, wherein the composition releases the drug with an immediate onset of action and continuously for at least 8 weeks and wherein the composition has a pharmacokinetic profile *in vivo* suitable for the formulation to be administered each 8 weeks or longer periods, **characterised in that** the biocompatible copolymer has a molecular weight in the range of between 31 and 43 kDa and an inherent viscosity in the range of between 0.27-0.31 dl/g ±10%.

2.- The composition of claim 1, wherein the biocompatible copolymer is gamma or beta irradiated in the dose range of 10-30 kGy measured at a temperature between –40ºC and +35ºC to adjust its molecular weight to a range between 31 and 43 kDa and its inherent viscosity to a range of between 0.27-0.31 dl/g ±10%.

3.- The composition claims 1 or 2, wherein the particle size distribution of the drug is:

- less than 10% particles smaller than 10 microns;
- less than 10% particles larger than 225 microns, and
- a d0.5 value in the range of 40-90 microns.

4.- The composition according to any one of claims 1 to 3, wherein the drug/(polymer+drug) mass ratio is about 33%.

5.- The composition according to any one of claims 1 to 4, wherein the content of drug is about 13% w/w of total formulation and the viscosity of the solution comprising the polymer and the DMSO is in the range of 1.5-2.5. Pa.s .

6.- The composition of any one of previous claims for the treatment of schizophrenia or bipolar disorders in the human body.

7.- A pharmaceutical kit suitable for the in situ formation of a biodegradable implant in a body comprising the composition of any one of claims 1-6, wherein the drug and the biocompatible polymer are contained in a first container, and the solvent is contained in a second, separate container.

8.- The pharmaceutical kit according to claim 7, wherein at least one of the first and second containers is a syringe, a vial, a device or a cartridge, either disposable or not.

9.- A method for the manufacturing of a composition according to any one of previous claims 1-6, comprising the step of providing a biocompatible copolymer having an initial polymer weight higher than required for the intramuscular depot composition and then adjusting its molecular weight to between 31 and 43 kDa and its inherent viscosity to a range of 0.27-0.31 dl/g by irradiating it with gamma or beta radiation in the dose range of 10-30 kGy measured at a temperature between –40ºC and +35ºC.

10. Method according to claim 9 wherein the dose range irradiated to the polymer is in the range of 16-25 kGy measured at the temperature of 8ºC.

11.- Method according to claims 9 or 10 wherein, when the biocompatible polymer has an initial molecular weight of about 50 kDa, it is irradiated with a radiation dose of about 16 kGy to reduce its molecular weight to between 27 and 47 kDa.

12.- Method according to claims 9 or 10 wherein, when the biocompatible polymer has an initial molecular weight of about 54 kDa, it is irradiated with a radiation dose of about 25 kGy to reduce its molecular weight to between 31 and 43 kDa.

13.- Method according to claims 9 or 10 wherein, when the biocompatible polymer has an initial molecular weight of about 63 kDa, it is irradiated with a radiation dose of about 30 kGy to reduce its molecular weight to between 31 and 43 kDa.

14.- A starting dosing regimen method for administering an injectable intramuscular depot composition according to any one of previous claims 1 to 6 to a patient in need of psychiatric treatment comprising:

a) administering intramuscularly to the patient a first dose in the amount of 75 mg to 250 mg

b) administering intramuscularly to the patient a second dose of the injectable depot composition, at a point of time between the 24th day and the 35th day counting from the previous administration day;

c) administering a subsequent dose of the injectable depot composition in the amount of 75 mg to 250 mg from about the 56th day to about the 65th day after the administration of said first dose; and

d) repeating step b) whenever required to achieve the levels needed to start the 8 weekly administration.

15.- The method of previous claim 14, wherein said first dose is about 100 mg to about 200 mg.

CLAIMS

1.- An injectable intramuscular depot composition suitable for forming an in situ solid implant in a body, comprising a drug which is paliperidone and/or its pharmaceutical acceptable salts in any combination thereof, a biocompatible copolymer based on lactic and glycolic acid having a monomer ratio of lactic to glycolic acid in the range of 50:50 and DMSO as solvent, wherein the composition releases the drug with an immediate onset of action and continuously for at least 8 weeks and wherein the composition has a pharmacokinetic profile *in vivo* suitable for the formulation to be administered each 8 weeks or longer periods, **characterised in that** the biocompatible copolymer has a molecular weight in the range of between 31 and 40 kDa and an inherent viscosity in the range of between 0.27-0.31 dl/g.

2.- The composition of claim 1, wherein the biocompatible copolymer is gamma or beta irradiated in the dose range of 10-30 KGy measured at a temperature between –40ºC and +35ºC to adjust its molecular weight to a range between 31 and 40 kDa and its inherent viscosity to a range of between 0.27-0.31 dl/g.

3.- The composition claims 1 or 2, wherein the particle size distribution of the drug is:

- less than 10% particles smaller than 10 microns;
- less than 10% particles larger than 225 microns, and
- a d0.5 value in the range of 40-130 microns.

4.- The composition according to any one of claims 1 to 3, wherein the drug/(polymer+drug) mass ratio is about 33%.

5.- The composition according to any one of claims 1 to 4, wherein the content of drug is about 13% w/w of total formulation and the viscosity of the solution comprising the polymer and the DMSO is in the range of 1.7 – 1.8 P.a.s.

6.- The composition of any one of previous claims for the treatment of schizophrenia or bipolar disorders in the human body.

7.- A pharmaceutical kit suitable for the in situ formation of a biodegradable implant in a body comprising the composition of any one of claims 1-6, wherein the drug and the biocompatible polymer are contained in a first container, and the solvent is contained in a second, separate container.

8.- The pharmaceutical kit according to claim 7, wherein at least one of the first and second containers is a syringe, a vial, a device or a cartridge, either disposable or not.

9.- A method for the manufacturing of a composition according to any one of previous claims 1-6, comprising the step of providing a biocompatible copolymer having an initial polymer weight higher than required for the intramuscular depot composition and then adjusting its molecular weight to between 31 and 40kDa and its inherent viscosity to a range of 0.27-0.31 dl/g by irradiating it with gamma or beta radiation in the dose range of 10-30 KGy measured at a temperature between –40ºC and +35ºC.

10. Method according to claim 9 wherein the dose range irradiated to the polymer is in the range of 16-25 KGy measured at the temperature of 8ºC.

11.- Method according to claims 9 or 10 wherein, when the biocompatible polymer has an initial molecular weight of about 50 kDa, it is irradiated with a radiation dose of about 16 KGy to reduce its molecular weight to between 35 and 38 kDa.

12.- Method according to claims 9 or 10 wherein, when the biocompatible polymer has an initial molecular weight of about 63 kDa, it is irradiated with a radiation dose of about 30 KGy to reduce its molecular weight to between 30 and 36 kDa.