The present invention relates to a novel process for the preparation of amorphous Dexlansoprazole from Dexlansoprazole solvate. The present invention also relates to novel processes for the preparation of polymorphic forms IV, VI, amorphous, anhydrous and hemihydrate forms of Dexlansoprazole.
PROCESS FOR THE PREPARATION OF DEXLANSOPRAZOLE POLYMORPHIC FORMS


FIELD OF THE INVENTION

The present invention relates to a novel process for the preparation of amorphous Dexlansoprazole from Dexlansoprazole solvate

The present invention also relates to novel processes for the preparation of polymorphic forms IV, VI, amorphous, anhydrous and hemihydrate of dexlansoprazole

BACKGROUND OF THE INVENTION

Benzimidazole compounds such as Lansoprazole, Omeprazole, Rabeprazole and the like have a proton pump inhibitor like activity such as gastric acid secretion suppressing effect and gastric mucosa defensive effect. These compounds are used extensively as agents for the treatment of peptic ulcer.


These benzimidazole compounds mentioned herein have a sulfur atom which is asymmetrically substituted forming a chiral centre WO92/8716 disclosed a pyrindimethylsulfanyl-1H-benzimidazole compound which is enantiomerically pure, or a salt thereof and a process for producing the same WO 99/38513 disclosed a method of treating ulcers, etc which comprises administering an optically pure (R)-lansoprazole (herein after referred as 'Dexlansoprazole') or a pharmaceutically acceptable salt thereof.
Dexlansoprazole, represented by Formula (I), is less toxic and showed excellent antiulcer action, gastric acid secretion-inhibiting action, mucosa-protecting action, anti-Helicobacter pylori action, etc.,

![Formula (I)](image)


US 6664276 disclosed the process for the preparation of amorphous Dexlansoprazole by dissolving racemic Lansoprazole in acetonitrile and fractionated by HPLC with the aid of a chiralcel column using mobile phase containing hexane/2-propanol/ethanol. The fractions of the optical isomers of shorter retention time were combined and concentrated. The individual lots were combined and dissolved in ethanol and filtered. Hexane is added and evaporated to dryness to yield amorphous Dexlansoprazole.

The US' 276 patent also disclosed the process for the preparation of Dexlansoprazole sesquihydrate by dissolving amorphous Dexlansoprazole in ethanol and water. The solution is seeded and allowed to stand at room temperature. Precipitated crystals were collected by filtration and dried to afford Dexlansoprazole sesquihydrate.

US 20060057195 disclosed the process for the preparation of amorphous Dexlansoprazole by keeping hydrated crystals of Dexlansoprazole at about 20° C to about 100° C. US 7271 182 disclosed crystalline sodium, lithium, potassium, magnesium, calcium and barium salts of Dexlansoprazole and processes for their preparation.

WO 2009088857 disclosed crystals of ethanol hydrate, isopropanol hydrate, hydrate, 1.0 hydrate, 1.5 hydrate, methanol solvate and ethanol solvate of Dexlansoprazole and processes for their preparation.
WO2009087672 disclosed stable amorphous Dexlansoprazole and a process for preparing the same by optically resolving racemic Lansoprazole by forming a reversible host-guest inclusion complex that includes a chiral guest molecule in the Lansoprazole lattice.

WO2009113696 A1 disclosed anhydrous crystal of Dexlansoprazole and a process for preparing the same by heating amorphous Dexlansoprazole or solvate or hydrate crystal of Dexlansoprazole to not lower than about 71°C.

The above-mentioned conventional method for the production of Dexlansoprazole does not necessarily satisfy the purity, solubility, preservation stability and industrial viability. Moreover, the prior art process involves heating up to 100°C wherein the possibility of forming impurities are more. Thus, there is a need for a better process for the preparation of Dexlansoprazole having superior properties than the ones disclosed in the prior art. Thus, the present invention relates to novel processes for preparation of amorphous and crystalline forms of Dexlansoprazole which are used in the pharmaceutical compositions.

**SUMMARY AND OBJECT OF THE INVENTION**

In one aspect, the present invention provides a novel process for the preparation of amorphous Dexlansoprazole by drying Dexlansoprazole solvate under reduced pressure at about 45°C.

In another aspect, the present invention provides a process for the preparation of amorphous Dexlansoprazole by keeping crystalline Dexlansoprazole Form III or Form VI in a desiccator in the presence of a dehydrating agent.

In yet another aspect, the present invention provides a process for the preparation of amorphous Dexlansoprazole by keeping Dexlansoprazole Form VI under reduced pressure.

In yet another aspect, the present invention provides a novel process for the preparation of crystalline Dexlansoprazole Form IV comprising the steps of, a) dissolving Dexlansoprazole in isopropyl alcohol, b) adding an antisolvent, and c) isolating crystalline Dexlansoprazole Form IV.
In yet another aspect, the present invention provides a novel process for the preparation of crystalline Dexlansoprazole Form VI comprising the steps of: a) dissolving Dexlansoprazole in n-propanol, b) adding an antisolvent, and c) isolating crystalline Dexlansoprazole Form VI.

In yet another aspect, the present invention provides a process for the preparation of anhydrous Dexlansoprazole by keeping crystalline Dexlansoprazole Form IV or Form V in a desiccator in the presence of a dehydrating agent.

In yet another embodiment, the present invention provides a process for the preparation of anhydrous Dexlansoprazole by keeping Dexlansoprazole Form IV under reduced pressure at a temperature of about 20-40° C for about 1 to 3 hours.

In yet another aspect, the present invention provides a novel process for the preparation of anhydrous Dexlansoprazole by removing water from Dexlansoprazole sesquihydrate.

In yet another embodiment, the present invention provides a process for the preparation of Dexlansoprazole hemihydrate by keeping Dexlansoprazole sesquihydrate in a desiccator in the presence of a dehydrating agent.

DETAILED DESCRIPTION OF THE INVENTION

The present invention relates to a novel process for the preparation of amorphous Dexlansoprazole from Dexlansoprazole solvate. The present invention also relates to novel processes for the preparation of crystalline Dexlansoprazole Form IV and Form VI. The present invention further relates to novel processes for the preparation of amorphous, crystalline anhydrous and crystalline hemihydrate forms of Dexlansoprazole.

In one embodiment, the present invention provides a process for the preparation of amorphous Dexlansoprazole comprising the steps of:

a) dissolving crystalline Dexlansoprazole in a mixture of alcohol and water,

b) cooling, isolating Dexlansoprazole solvate, and

c) drying the obtained compound in step b) under reduced pressure to get amorphous Dexlansoprazole.
According to the present invention crystalline Dexlansoprazole is dissolved in a mixture of alcohol and water, cooled to 5-10°C for about an hour, the obtained solid is filtered to give crystalline Dexlansoprazole solvate. The obtained Dexlansoprazole solvate is dried at about 45°C under reduced pressure for 8-14 hrs to give amorphous Dexlansoprazole.

According to the present invention the alcohol used for the dissolution of Dexlansoprazole is selected from methanol, ethanol, n-propanol, isopropanol, n-butanol or tert-butanol. Crystalline Dexlansoprazole solvate formed here is Dexlansoprazole alcohol hydrate and the Dexlansoprazole alcohol hydrate is Dexlansoprazole ethanol hydrate or Dexlansoprazole n-propanol hydrate or Dexlansoprazole methanol hydrate or Dexlansoprazole n-butanol hydrate or tert-butanol hydrate.

In another embodiment, the present invention provides a novel process for the preparation of amorphous Dexlansoprazole by drying Dexlansoprazole solvate under reduced pressure at about 45°C.

According to the present invention, Dexlansoprazole solvate is dried at about 45°C under reduced pressure for 8-14 hrs to give amorphous Dexlansoprazole.

In yet another embodiment, the present invention provides a process for the preparation of amorphous Dexlansoprazole by keeping crystalline Dexlansoprazole Form III or Form VI in a desiccator in the presence of a dehydrating agent.

According to the present invention amorphous Dexlansoprazole is prepared by keeping crystalline Dexlansoprazole Form III and Form VI in a desiccator in the presence of a dehydrating agent at 25 to 35°C for about 5 days to about 24 hours respectively.

In yet another embodiment, the present invention provides a process for the preparation of amorphous Dexlansoprazole by keeping Dexlansoprazole Form VI under reduced pressure.

According to the present invention amorphous Dexlansoprazole is prepared by keeping Dexlansoprazole Form VI for about 1 to 2 hours at 35°C under vacuum and slowly raised the temperature to 45°C and dried for about 1 to 3 hrs to give amorphous Dexlansoprazole.
In yet another embodiment, the present invention provides a process for the preparation of crystalline Dexlansoprazole Form IV comprising the steps of
a) dissolving Dexlansoprazole in isopropyl alcohol,
b) adding to an antisolvent, and
c) isolating crystalline Dexlansoprazole Form IV

According to the present invention, Dexlansoprazole is dissolved in isopropyl alcohol. To the clear solution is added to n-pentane and stirred for about an hour or two at room temperature. The obtained solid is filtered and dried at ambient temperature to give crystalline Dexlansoprazole Form IV.

In another embodiment, the present invention provides a process for the preparation of novel crystalline Dexlansoprazole Form VI comprising the steps of
a) dissolving Dexlansoprazole in n-propanol,
b) adding to an antisolvent, and
c) isolating crystalline Dexlansoprazole Form VI

According to the present invention, Dexlansoprazole is dissolved in n-propanol and treated with carbon. This solution is added to n-pentane which is pre-cooled to 0-5°C, stirred for about 1 hr at the same temperature, filtered and sucked dried to give crystalline Dexlansoprazole Form VI.

In yet another embodiment, the present invention provides a process for the preparation of anhydrous Dexlansoprazole by keeping crystalline Dexlansoprazole Form IV or Form V in a desiccator in the presence of a dehydrating agent.

According to the present invention, anhydrous Dexlansoprazole is prepared by keeping crystalline Dexlansoprazole Form IV or Form V in a desiccator in the presence of a dehydrating agent at 25 to 35°C for 15 hours to give anhydrous Dexlansoprazole.

In yet another embodiment, the present invention provides a process for the preparation of anhydrous Dexlansoprazole by keeping Dexlansoprazole Form IV under reduced pressure at a temperature of about 45°C for about 1 to 3 hours.
In yet another embodiment, the present invention provides a process for the preparation of anhydrous Dexlansoprazole by keeping Dexlansoprazole Form V under reduced pressure at a temperature of about 45°C for about 3 to 5 hours.

According to the present invention anhydrous Dexlansoprazole is prepared by keeping Dexlansoprazole Form IV or Form V for about 1 to 2 hours at 35°C under vacuum and slowly raised the temperature to 45°C and dried for about 1 to 5 hrs to give anhydrous Dexlansoprazole.

In yet another embodiment, the present invention provides a process for the preparation of anhydrous Dexlansoprazole comprising the steps of,

a) suspending Dexlansoprazole sesquihydrate in solvent,

b) removing water,

c) optionally adding an antisolvent, and

d) isolating anhydrous Dexlansoprazole.

According to the present invention, Dexlansoprazole sesquihydrate is suspended in a solvent, stirred for about 5-15 mm, heated to reflux, azeotropic mixture is collected through dean-stark apparatus, reaction mass is cooled to room temperature, optionally added an antisolvent, the reaction mass is stirred for about 15-30 mm at the room temperature and the obtained solid is filtered to get anhydrous Dexlansoprazole.

According to the present invention, solvent used for the suspending Dexlansoprazole sesquihydrate is selected from dichloromethane, chloroform, hexane, heptane, cyclohexane, diethylether, dusopropylether or mixtures thereof and the antisolvent used is selected from hexane, heptane, cyclohexane, diethylether or dnsopropylether.

The term "suspend" used herein may be dissolution, partially dissolution or undissolution.

In yet another embodiment, the present invention provides a process for the preparation of anhydrous dexlansoprazole comprising the steps of,

a) dissolving Dexlansoprazole sesquihydrate in water miscible solvent,

b) removing water,

c) adding an antisolvent, and
d) isolating crystalline anhydrous dexlansoprazole

According to the present invention, Dexlansoprazole sesquihydrate is dissolved in a water miscible solvent, stirred for about 5-15 min, the solvent is removed to a minimal volume, preferably about 3 volumes of the solvent is removed by distillation under reduced pressure, the solution is cooled to room temperature, slowly added an antisolvent, the reaction mass is stirred for about 15-30 mm at room temperature, and the obtained solid is filtered to get crystalline anhydrous Dexlansoprazole

According to the present invention water miscible solvent is selected from acetonitrile, methanol, ethanol or isopropanol and the antisolvent is selected from diethyl ether, dnsopropylether, hexane, heptane or cyclohexane

In yet another embodiment, the present invention provides a process for the preparation of Dexlansoprazole hemihydrate by keeping Dexlansoprazole sesquihydrate in a desiccator in the presence of a dehydrating agent

According to the present invention, Dexlansoprazole sesquihydrate is kept in a desiccator in presence of a dehydrating agent at 25 to 35°C for 15 to 24 hours to give Dexlansoprazole hemihydrate

According to the present invention the dehydrating agent employed herein is selected from phosphorous pentoxide, manganese oxide, molecular sieves, calcium oxide, silica gel, anhydrous sodium hydroxide, calcium chloride, potassium carbonate and the like

The following examples are provided for illustrative purposes only and are not intended to limit the scope of the in any way

EXAMPLES

Example 1: Preparation of amorphous Dexlansoprazole.

Dexlansoprazole (200g) was dissolved in ethanol (385ml) and DM water (15ml) at 25-30°C and heated to 40-45°C to get clear solution. The reaction mass was stirred at 40-45°C for about 10-15 mm and filtered the reaction mass through hi-flow bed. The filtrate thus obtained was cooled to 5-10° for about 45-60 mm, filtered the compound and spin dried at 25-30°C for
about 15-30 min to get Dexlansoprazole ethanol hydrate. The compound obtained was dried in vacuum oven at 40°C for 12-14 hrs to obtain 135g of the title compound.

**Example 2: Preparation of amorphous Dexlansoprazole.**

Dexlansoprazole (50g) was dissolved in n-propanol (100ml) and DM water (3.7ml) at 25-30°C and heated to 40-45°C to get clear solution. The reaction mass was stirred at 40-45°C for about 10-15 mm and filtered the reaction mass through hi-flow bed. The filtrate thus obtained was cooled to 5-10°C for about 45-60 mm, filtered the compound and spin dried at 25-30°C for about 15-30 mm to get Dexlansoprazole propanol hydrate. The compound thus obtained was dried in vacuum oven at 40°C for 12-14 hrs to obtain 18g of the title compound.

**Example 3: Preparation of amorphous Dexlansoprazole.**

Dexlansoprazole Form III (5g) was kept in a desiccator for drying in presence of phosphorous pentoxide at 25 to 30°C for 5 days. The resulted solid was identified as amorphous form of Dexlansoprazole.

**Example 4: Preparation of amorphous Dexlansoprazole.**

Dexlansoprazole Form VI (5g) was kept in a desiccator for drying in presence of phosphorous pentoxide at 25 to 30°C for 24 hours. The resulted solid was identified as amorphous form of Dexlansoprazole.

**Example 5: Preparation of amorphous Dexlansoprazole.**

Dexlansoprazole Form VI (2.5g) was kept in a desiccator for drying in presence of 3A molecular sieve powder at 25 to 30°C for 16 hours under nitrogen atmosphere. The resulted solid was identified as amorphous form of Dexlansoprazole (HPLC Purity > 99.95%).

**Example 6: Preparation of amorphous Dexlansoprazole.**

Dexlansoprazole Form VI (2.5g) was kept in a desiccator for drying in presence of 4A molecular sieve powder at 25 to 30°C for 16 hours under nitrogen atmosphere. The resulted solid was identified as amorphous form of Dexlansoprazole (HPLC Purity > 99.95%).
Example 7: Preparation of amorphous Dxlansoprazole.
Dxlansoprazole Form VI (20g) was dried for 1 to 2 hours at 30°C under vacuum and slowly the temperature was raised to 40°C and dried for 1 to 3 hours. The solid was identified as amorphous form of Dxlansoprazole.

Example 8: Preparation of Dxlansoprazole Form III.
Dxlansoprazole (1g) was dissolved in ethanol (5 ml) at 25-30°C. The clear solution was added to heptane (50 ml) and maintained for 30-60 mm at 25-30°C with agitation. The solid obtained was filtered and dried at ambient temperature. The product obtained was identified as Dxlansoprazole Form III.

Example 9: Preparation of Dxlansoprazole Form IV.
Dxlansoprazole (5g) was dissolved in isopropyl alcohol (20 ml) at 25 to 30°C. The solution was filtered to remove the undissolved particulate material. This clear solution was added to n-Pentane (200 ml) and stirred for 1 hour at 25 to 30°C. The solid obtained was filtered and dried at ambient temperature. The product was identified as Dxlansoprazole Form IV.

Example 10: Preparation of Dxlansoprazole Form V.
3g of Dxlansoprazole was suspended in pyridine (12 ml) at 25-30°C and stirred for 15-20 mm to get the clear solution. To this solution, heptane (100 ml) was added dropwise and maintained for 30-60 mm at 25-30°C with agitation. The solid obtained was filtered and washed with heptane (50 ml). The product obtained was identified as Dxlansoprazole Form V.

Example 11: Preparation of Dxlansoprazole Form VI.
Dxlansoprazole (20g) was dissolved in n-propanol (80 ml) at 25 to 30°C. 2g carbon was added to the above solution and stirred for 10 to 15 minutes at 25 to 30°C. The solution was then filtered through hi-flow bed and washed with n-propanol (10 ml). In another flask, n-Pentane (900 ml) was cooled to 0 to 5°C. The above reaction mixture was added to n-Pentane and stirred for 1 hour at 0 to 5°C. The solid obtained was filtered and suction dried. The product was identified as Dxlansoprazole Form VI.
Example 12: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole Form IV (2g) was kept in a desiccator for drying in presence of phosphorous pentoxide at 25 to 30°C for 15 hours. The resulted solid was identified as anhydrous form of Dexlansoprazole.

Example 13: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole Form V (3g) was kept in oven at 40°C under vacuum for 1 to 3 hours. The resulting solid was identified as anhydrous Dexlansoprazole.

Example 14: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole Form V (3g) was kept in oven at 40°C under vacuum for 3 to 5 hours. The resulting solid was identified as anhydrous Dexlansoprazole.

Example 15: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole sesquihydrate (10g) was suspended in diisopropylether (300ml), stirred the reaction mass for about 10 min and heated the reaction mass to 70-75°C. The azeotropic mixture (150ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C and stirred for about 20 min at the same temperature, filtered the solid and washed with diisopropyl ether (10ml) to yield 8.8 g of the title compound.

Example 16: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole sesquihydrate (50g) was suspended in cyclohexane (800ml) and dichloromethane (400ml), stirred the reaction mass for about 10 min and heated the reaction mass to 55-60°C. The azeotrope mixture (400ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C and stirred for about 20 min at the same temperature. Filtered the solid and washed with cyclohexane (100ml) to yield 42 g of the title compound.

Example 17: Preparation of anhydrous Dexlansoprazole.
Dexlansoprazole sesquihydrate (10g) was suspended in dichloromethane (200ml), stirred the reaction mass for about 10 min and heated the reaction mass to 40-45°C. The azeotrope mixture (180ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C, cyclohexane (120ml) was added to the residue, stirred for about 20 min at the
Example 18: Preparation of anhydrous Dexlansoprazole.

Dexlansoprazole sesquihydrate (50g) was suspended in n-heptane (220ml), stirred the reaction mass for about 10 min and heated the reaction mass to 95-100°C. The azeotrope mixture (50ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C, stirred for about 20 min at the same temperature, filtered the solid and washed with n-heptane (20ml) to yield 9.1g of the title compound.

Example 19: Preparation of anhydrous Dexlansoprazole.

Dexlansoprazole sesquihydrate (10g) was suspended in n-heptane (180ml) and dichloromethane (20ml), stirred the reaction mass for about 10 min and heated the reaction mass to 65-70°C. The azeotrope mixture (20ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C and stirred for about 20 min at the same temperature, filtered the solid and washed with n-heptane (20ml) to yield 9.0g of the title compound.

Example 20: Preparation of anhydrous Dexlansoprazole.

Dexlansoprazole sesquihydrate (10g) was suspended in n-hexane (300ml), stirred the reaction mass for about 10 min and heated the reaction mass to 70-75°C. The azeotrope mixture (150ml) was collected by using dean stark apparatus. The reaction mass was cooled to 25-30°C and stirred for about 20 min at the same temperature, filtered the solid and washed with n-hexane (10ml) to yield 9.0g of the title compound.

Example 21: Preparation of anhydrous Dexlansoprazole.

Dexlansoprazole sesquihydrate (10g) was dissolved in acetonitrile (50ml) and stirred the reaction mass for about 10 min to get a clear solution. The solvent was distilled off about 3 volumes under vacuum at 45°C. The solution was cooled to 20-25°C, diisopropylether (150ml) was added drop wise to the reaction mass and stirred for about 20 min at the same temperature, filtered the solid and washed with diisopropylether (10ml) to yield 8.5g of the title compound.
Example 22: Preparation of Dexlansoprazole hemihydrate.
Dexlansoprazole sesquihydrate (2g) was kept in a desiccator for drying in presence of phosphorous pentoxide at 25 to 30°C for 15 to 24 hours. The resulted solid was identified as Dexlansoprazole hemihydrate.

Example 23: Preparation of Dexlansoprazole hemihydrate.
Dexlansoprazole sesquihydrate (2g) was kept in a desiccator for drying in presence of 3A molecular sieve powder at 25 to 30°C for 16 hours under nitrogen atmosphere. The resulted solid was identified as Dexlansoprazole hemihydrate.

Example 24: Preparation of Dexlansoprazole hemihydrate.
Dexlansoprazole sesquihydrate (2g) was kept in a desiccator for drying in presence of 4A molecular sieve powder at 25 to 30°C for 16 hours under nitrogen atmosphere. The resulted solid was identified as Dexlansoprazole hemihydrate.
WE CLAIM:

1. A process for the preparation of amorphous Dexlansoprazole comprising the steps of:
   a) dissolving Dexlansoprazole in a mixture of alcohol and water,
   b) cooling, isolating Dexlansoprazole solvate, and
   c) drying the obtained compound in step b) under reduced pressure to get amorphous Dexlansoprazole.

2. The process according to claim 1, wherein said alcohol is selected from methanol, ethanol, n-propanol, isopropanol, n-butanol or tert-butanol.

3. The process according to claim 1, wherein said Dexlansoprazole solvate is Dexlansoprazole alcohol hydrate.

4. The process according to claim 3, wherein said Dexlansoprazole alcohol hydrate is Dexlansoprazole ethanol hydrate, Dexlansoprazole n-propanol hydrate, Dexlansoprazole n-butanol hydrate, Dexlansoprazole isopropanol hydrate or Dexlansoprazole tert-butanol hydrate.

5. A process for the preparation of amorphous Dexlansoprazole comprises drying solvate crystals of Dexlansoprazole under reduced pressure.

6. The process according to claim 5, wherein said drying is carried out under vacuum at about 20°C to about 45°C.

7. A process for the preparation of amorphous Dexlansoprazole by keeping crystalline Dexlansoprazole in a desiccator in the presence of a dehydrating agent.

8. The process according to claim 7, wherein said crystalline Dexlansoprazole is crystalline Dexlansoprazole Form III or Form VI.

9. A process for the preparation of amorphous Dexlansoprazole by keeping crystalline Dexlansoprazole Form VI under reduced pressure at about 20-40°C for about 1-3 hours.
10. A process for the preparation of crystalline Dexlansoprazole Form IV comprising the steps of:
   a) dissolving Dexlansoprazole in isopropylalcohol,
   b) adding to an antisolvent, and
   c) isolating Dexlansoprazole Form IV.

11. A process for the preparation of crystalline Dexlansoprazole Form VI comprising the steps of:
   a) dissolving Dexlansoprazole in n-propanol,
   b) adding to an antisolvent, and
   c) isolating Dexlansoprazole Form VI.

12. The process according to claim 10 and 11, wherein said antisolvent is n-pentane or n-heptane.


14. A process for the preparation of anhydrous Dexlansoprazole by keeping crystalline Dexlansoprazole Form IV or Form V under reduced pressure at about 20-40°C.

15. A process for the preparation of anhydrous Dexlansoprazole comprising the steps of:
   a) suspending Dexlansoprazole sesquihydrate in solvent,
   b) removing water,
   c) optionally adding an antisolvent, and
   d) isolating crystalline anhydrous Dexlansoprazole.

16. The process according to claim 15, wherein said solvent is selected from dichloromethane, chloroform, hexane, heptane, cyclohexane, diethylether, diisopropylether or mixtures thereof and the antisolvent is selected from hexane, heptane, cyclohexane, diethylether or diisopropylether.

17. The process according to claim 15, wherein water is removed by azeotropic mixture.
18. A process for the preparation of anhydrous Dexlansoprazole comprising the steps of:
   a) dissolving Dexlansoprazole sesquihydrate in a water miscible solvent,
   b) removing water,
   c) adding an antisolvent, and
   d) isolating crystalline anhydrous Dexlansoprazole.

19. The process according to claim 18, wherein said water miscible solvent is selected from
    acetonitrile, methanol, ethanol or isopropanol and the antisolvent is selected from
diethyl ether, diisopropylether, hexane, heptane or cyclohexane.

20. The process according to claim 18, wherein water is removed by distillation under
    reducing pressure.

21. A process for the preparation of crystalline Dexlansoprazole hemihydrate by keeping
    Dexlansoprazole sesquihydrate in a desiccator in the presence of a dehydrating agent.

22. The process according to claims 7, 13 and 21, wherein said dehydrating agent is
    selected from phosphorous pentoxide, manganese oxide, molecular sieves, calcium
    oxide, silica gel, anhydrous sodium hydroxide, calcium chloride or potassium carbonate.