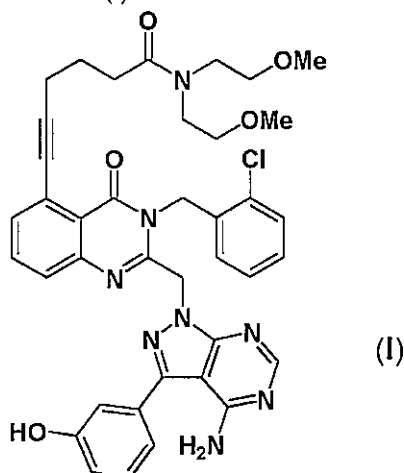


Claims

1. A dry powder pharmaceutical formulation for inhalation comprising:
 - (i) a compound of formula (I)



that is 6-(2-((4-amino-3-(3-hydroxyphenyl)-1*H*-pyrazolo[3,4-*d*]pyrimidin-1-yl) methyl)-3-(2-chlorobenzyl)-4-oxo-3,4-dihydroquinazolin-5-yl)-*N,N*-bis(2-methoxyethyl)hex-5-ynamide or a pharmaceutically acceptable salt thereof, including all stereoisomers, tautomers and isotopic derivatives thereof and solvates thereof in particulate form as active ingredient;

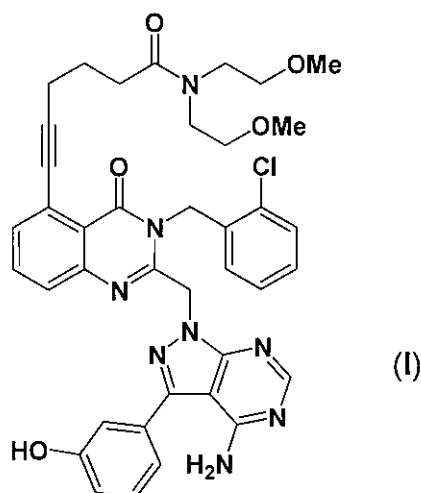
- (ii) particulate lactose as carrier; and
 - (iii) a particulate stabilizing agent selected from metal salts of stearic acid and metal salts of stearyl fumarate.
2. A pharmaceutical formulation according to claim 1, wherein the compound of formula (I) is in its free base form.
3. A pharmaceutical formulation according to claim 1 or claim 2, wherein the compound of formula (I) is in solid crystalline form.
4. A pharmaceutical formulation according to claim 3, wherein the compound of formula (I) is in anhydrous form.
5. A pharmaceutical formulation according to claim 4, wherein the compound of formula (I) is in solid crystalline form having the X-ray powder diffraction pattern substantially as shown in Figure 1.
6. A pharmaceutical formulation according to claim 4, wherein the compound of formula (I) is in solid crystalline form having a X-ray powder diffraction pattern containing one, two, three or four peaks selected from (± 0.2) 17.6, 18.4, 22.5 and 24.2 degrees 2-theta.

7. A pharmaceutical formulation according to any one of claims 1 to 6 wherein the active ingredient has been micronized.
8. A pharmaceutical formulation according to any one of claims 1 to 7 wherein the stabilizing agent is a metal salt of stearic acid.
9. A pharmaceutical formulation according to claim 8 wherein the stabilizing agent is magnesium stearate.
10. A pharmaceutical formulation according to any one of claims 1 to 9 wherein the lactose is α -lactose monohydrate.
11. An inhalation device comprising one or more doses of a pharmaceutical formulation according to any one of claims 1 to 10.
12. A pharmaceutical formulation according to any one of claims 1 to 10 or an inhalation device according to claim 11 for use in the treatment or prevention of a condition selected from: COPD (including chronic bronchitis and emphysema), asthma including paediatric asthma, cystic fibrosis, sarcoidosis, idiopathic pulmonary fibrosis, cachexia and inhibition of the growth and metastasis of lung tumours including non-small cell lung carcinoma.
13. Use of a pharmaceutical formulation according to any one of claims 1 to 10 in the manufacture of a medicament for the treatment or prevention of a condition selected from:
COPD (including chronic bronchitis and emphysema), asthma including paediatric asthma, cystic fibrosis, sarcoidosis, idiopathic pulmonary fibrosis, cachexia and inhibition of the growth and metastasis of lung tumours including non-small cell lung carcinoma.
14. A method of treatment of a condition selected from:
COPD (including chronic bronchitis and emphysema), asthma including paediatric asthma, cystic fibrosis, sarcoidosis, idiopathic pulmonary fibrosis, cachexia and inhibition of the growth and metastasis of lung tumours including non-small cell lung carcinoma which comprises administering to a subject an effective amount of a pharmaceutical formulation according to any one of claims 1 to 10.
15. Use of a stabilizing agent selected from metal salts of stearic acid and metal salts of stearyl fumarate in a pharmaceutical formulation containing a compound of formula (I) and lactose to increase the stability of the compound of formula (I) to chemical degradation.

16. Use according to claim 15 wherein the compound of formula (I) is in solid crystalline anhydrous form.
17. Use according to claim 16 wherein the compound of formula (I) is in solid crystalline form having the X-ray powder diffraction pattern substantially as shown in Figure 1.
18. Use according to claim 16 wherein the compound of formula (I) is in solid crystalline form having a X-ray powder diffraction pattern containing one, two, three or four peaks selected from (± 0.2) 17.6, 18.4, 22.5 and 24.2 degrees 2-theta.
19. Use according to any one of claims 15 to 18 wherein the stabilizing agent is a metal salt of stearic acid.
20. Use according to claim 19 wherein the stabilizing agent is magnesium stearate.
21. A method of increasing the stability of a pharmaceutical formulation containing a compound of formula (I) and lactose to chemical degradation which comprises including in said formulation a stabilizing amount of a stabilizing agent selected from metal salts of stearic acid such as magnesium stearate and metal salts of stearyl fumarate.
22. A method according to claim 21 wherein the compound of formula (I) is in solid crystalline anhydrous form.
23. A method according to claim 22 wherein the compound of formula (I) is in solid crystalline form having the X-ray powder diffraction pattern substantially as shown in Figure 1.
24. A method according to claim 22 wherein the compound of formula (I) is in solid crystalline form having the X-ray powder diffraction pattern containing one, two, three or four peaks selected from (± 0.2) 17.6, 18.4, 22.5 and 24.2 degrees 2-theta.
25. A method according to any one of claims 21 to 24 wherein the stabilizing agent is a metal salt of stearic acid.
26. A method according to claim 25 wherein the stabilizing agent is magnesium stearate.

Claims

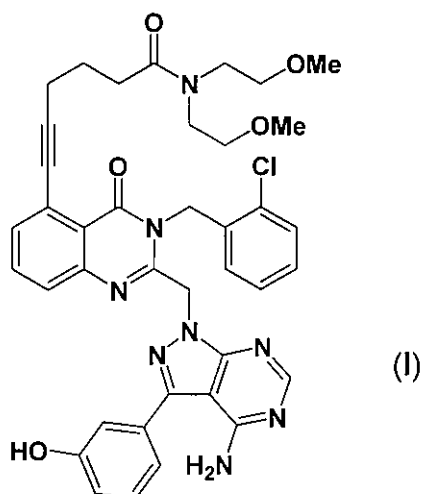
1. A method of increasing the stability to chemical degradation of a pharmaceutical formulation containing a compound of formula (I)



that is 6-(2-((4-amino-3-(3-hydroxyphenyl)-1*H*-pyrazolo[3,4-*d*]pyrimidin-1-yl) methyl)-3-(2-chlorobenzyl)-4-oxo-3,4-dihydroquinazolin-5-yl)-*N,N*-bis(2-methoxyethyl)hex-5-ynamide or a pharmaceutically acceptable salt thereof including all stereoisomers, tautomers and isotopic derivatives thereof and solvates thereof in particulate form as active ingredient

and particulate lactose which comprises including in said formulation a stabilizing amount of a particulate stabilizing agent selected from metal salts of stearic acid such as magnesium stearate and metal salts of stearyl fumarate.

2. Use of a particulate stabilizing agent selected from metal salts of stearic acid and metal salts of stearyl fumarate in a pharmaceutical formulation containing a compound of formula (I)



that is 6-(2-((4-amino-3-(3-hydroxyphenyl)-1*H*-pyrazolo[3,4-*d*]pyrimidin-1-yl) methyl)-3-(2-chlorobenzyl)-4-oxo-3,4-dihydroquinazolin-5-yl)-*N,N*-bis(2-methoxyethyl)hex-5-

ynamide or a pharmaceutically acceptable salt thereof including all stereoisomers, tautomers and isotopic derivatives thereof and solvates thereof in particulate form as active ingredient and particulate lactose to increase the stability of the compound of formula (I) to chemical degradation.

3. A method according to claim 1 wherein the compound of formula (I) is in its free base form.
4. A method according to claim 3 wherein the compound of formula (I) is in solid crystalline anhydrous form.
5. A method according to claim 3 wherein the compound of formula (I) is in solid crystalline form having the X-ray powder diffraction pattern containing one, two, three or four peaks selected from (± 0.2) 17.6, 18.4, 22.5 and 24.2 degrees 2-theta.
6. A method according to any one of claims 1 and 3 to 5 wherein the stabilizing agent is a metal salt of stearic acid.
7. A method according to claim 6 wherein the stabilizing agent is magnesium stearate.
8. A method according to any one of claims 1 and 3 to 7 wherein the active ingredient has been micronized.
9. A method according to any one of claims 1 and 3 to 8 wherein the lactose is α -lactose monohydrate.
10. Use according to claim 2 wherein the compound of formula (I) is in its free base form.
11. Use according to claim 10 wherein the compound of formula (I) is in solid crystalline anhydrous form.
12. Use according to claim 10 wherein the compound of formula (I) is in solid crystalline form having a X-ray powder diffraction pattern containing one, two, three or four peaks selected from (± 0.2) 17.6, 18.4, 22.5 and 24.2 degrees 2-theta.
13. Use according to any one of claims 2 and 10 to 12 wherein the stabilizing agent is a metal salt of stearic acid.

14. Use according to claim 13 wherein the stabilizing agent is magnesium stearate.
15. Use according to claim 2 and 10 to 14 wherein the lactose is α -lactose monohydrate.