

computational prediction of pharmaceutical crystal structures and polymorphism,” *Advanced Drug Delivery Reviews* 56:301-319 (“Price”); and Bernstein, 2004, “Crystal Structure Prediction and Polymorphism,” *ACA Transactions* 39:14-23 (a great deal still needs to be learned and done before one can state with any degree of confidence the ability to predict a crystal structure, much less polymorphic forms)). The preparation of solid forms is of great importance in the development of a safe, effective, stable, and marketable pharmaceutical compound.

[0010] Citation or identification of any references in this disclosure is not to be construed as an admission that the references are prior art to this disclosure.

3. SUMMARY

[0010a] In a first aspect of the present disclosure, there is provided a use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for treating or preventing cancer, an inflammatory condition, an immunological condition, a neurodegenerative disease, diabetes, obesity, a neurological disorder, an age-related disease, a cardiovascular condition, or a conditions treatable or preventable by inhibition of a kinase pathway.

[0010b] In a second aspect of the present disclosure, there is provided a use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for achieving a Response Evaluation Criteria in Solid Tumors (RECIST 1.1) of complete response, partial response or stable disease in a subject having a solid tumor.

[0010c] In a third aspect of the present disclosure, there is provided a use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-

yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for improving International Workshop Criteria (IWC) for NHL, International Uniform Response Criteria for Multiple Myeloma (IURC), Eastern Cooperative Oncology Group Performance Status (ECOG) or Response Assessment for Neuro-Oncology (RANO) Working Group for GBM.

[0010d] In a fourth aspect of the present disclosure, there is provided a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate for use in treating or preventing a disease, disorder, or condition in a subject.

[0011] Provided herein are compositions of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof. In one embodiment, the solid form is crystalline. In another embodiment, the solid form is a single-component crystalline form of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one. In yet another embodiment, the solid form is crystalline Form A of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one.

[0012] In yet another embodiment, the solid form is a hydrate. In yet another embodiment, the solid form is hydrate Form B of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one.

[0013] In yet another embodiment, the solid form is anhydrous. In yet another embodiment, the solid form is anhydrous Form C of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one.

[0014] In yet another embodiment, the solid form is a solvate. In yet another embodiment, the solid form is methanol solvate Form D of 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one.

CLAIMS

What is claimed is:

1. Use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for treating or preventing cancer, an inflammatory condition, an immunological condition, a neurodegenerative disease, diabetes, obesity, a neurological disorder, an age-related disease, a cardiovascular condition, or a conditions treatable or preventable by inhibition of a kinase pathway.
2. The use of claim 1, wherein the kinase pathway is the TOR kinase pathway.
3. Use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for achieving a Response Evaluation Criteria in Solid Tumors (RECIST 1.1) of complete response, partial response or stable disease in a subject having a solid tumor.
4. Use of a pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate in the manufacture of a medicament for improving International Workshop Criteria (IWC) for NHL, International Uniform Response Criteria for Multiple Myeloma (IURC), Eastern Cooperative Oncology Group Performance Status (ECOG) or Response Assessment for Neuro-Oncology (RANO) Working Group for GBM.

5. A pharmaceutical composition comprising 7-(6-(2-hydroxypropan-2-yl)pyridin-3-yl)-1-((*trans*)-4-methoxycyclohexyl)-3,4-dihydropyrazino[2,3-*b*]pyrazin-2(1*H*)-one, or a pharmaceutically acceptable salt, isotopologue, metabolite or solid form thereof, stearic acid and lactose monohydrate for use in treating or preventing a disease, disorder, or condition in a subject.