

IMIDAZO [4 , 5 -C] QUINOLIN- 2 -ONE COMPOUND AND ITS USE AS PI3 KINASE / MTOR DUAL INHIBITOR

The phosphoinositide 3-kinases (PI3Ks) are a family of lipid kinases that propagate intracellular signaling cascades regulating a wide range of cellular processes. For example, PI3K activation initiates a signal transduction cascade that promotes cancer cell growth, survival and metabolism. The mammalian target of rapamycin (mTOR) is a key signaling node coordinating cell cycle progression and cell growth in response to genetic, epigenetic, and environmental conditions. Pathways involved in mTOR signaling are dysregulated in precancerous human tissues. In view of the roles that PI3K and mTOR hold in cell cycle pathways, inhibition of both PI3K and mTOR may be useful in the treatment of certain human illnesses, such as cancer.

PI3K inhibitors and PI3K/mTOR dual inhibitors are known in the art. WO 2010/038165 discloses certain imidazo[1,5]naphthyridine compounds asserted to be modulators or inhibitors of the PI3-K α enzyme and/or PI3-K α /mTOR dual inhibitors. WO 2010/139731 and WO 2010/139747 disclose certain imidazoquinolinone compounds asserted for use in the treatment of protein or lipid kinase dependent diseases, particularly PI3K dependent diseases.

There remains a need to provide alternative PI3K/mTOR inhibitors, particularly potent PI3K/mTOR inhibitors with beneficial physical properties, such as improved solubility, and/or desirable clinical properties, such as improved in vivo potency and/or pharmacokinetic performance, which can be used in the treatment of cell proliferative disorders such as cancer. The present invention provides potent PI3K/mTOR inhibitors. More particularly, the present invention provides potent PI3K/mTOR inhibitors with beneficial physical properties and/or desirable clinical properties that are useful as anticancer agents.

Summary

In a first aspect, there is provided a compound which is 8-[5-(1-hydroxy-1-methylethyl)pyridin-3-yl]-1-[(2S)-2-methoxypropyl]-3-methyl-1,3-dihydro-2H-imidazo[4,5-c]quinolin-2-one, or a pharmaceutically acceptable salt thereof.

In a second aspect, there is provided a pharmaceutical composition comprising the compound or salt as defined herein, and a pharmaceutically acceptable carrier, diluent, or excipient.

In a third aspect, there is provided the compound or salt as defined herein for use in therapy.

In a fourth aspect, there is provided the compound or salt as defined herein for use in the treatment of cancer.

Detailed Disclosure

The present invention provides a compound which is 8-[5-(1-hydroxy-1-methylethyl)pyridin-3-yl]-1-[(2S)-2-methoxypropyl]-3-methyl-1,3-dihydro-2H-imidazo[4,5-c]quinolin-2-one, or a pharmaceutically acceptable salt thereof.

As a particular embodiment, the present invention provides the compound which is 8-[5-(1-hydroxy-1-methylethyl)pyridin-3-yl]-1-[(2S)-2-methoxypropyl]-3-methyl-1,3-dihydro-2H-imidazo[4,5-c]quinolin-2-one.