Product Data Sheet

Chemical Properties

- **Product Name:** BKM120
- **Cas No.:** 944396-07-0
- **M.Wt:** 410.39
- **Formula:** C18H21F3N6O2
- **Synonyms:** BKM-120, Buparlisib, BKM120, NVP-BKM120, NVP-BKM-120
- **Chemical Name:** 5-(2,6-dimorpholin-4-ylpyrimidin-4-yl)-4-(trifluoromethyl)pyridin-2-amine
- **Canonical SMILES:** C1COCN1C2=NC(=NC(=C2)C3=CN=C(C=C3(F)(F)F)N)N4CCOC4
- **Solubility:** ≥20.52mg/mL in DMSO
- **Storage:** Store at -20°C
- **General tips:** For obtaining a higher solubility, please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shopping Condition:
- Evaluation sample solution: ship with blue ice
- All other available size: ship with RT, or blue ice upon request

Biological Activity

- **Targets:** PI3K/Akt/mTOR Signaling
- **Pathways:** PI3K
- **Description:**

BKM120 (NVP-BKM120, Buparlisib) is a selective PI3K inhibitor of p110α/β/δ/γ with IC50 of 52 nM/166 nM/116 nM/262 nM, respectively. The intracellular phosphatidylinositol-3-kinase (PI3K) pathway regulates cellular functions including cell proliferation, growth, survival, apoptosis, protein synthesis, and glucose.
metabolism. BKM120, a biologic characterization of the 2-morpholino pyrimidine derivative, is a pan-PI3K inhibitor.

In vitro: NVP-BKM120 inhibits all four class I PI3K isoforms in biochemical assays with at least 50-fold selectivity against other protein kinases. NVP-BKM120 is also active against the most common somatic PI3Ka mutations but does not significantly inhibit the related class III (Vps34) and class IV (mTOR, DNA-PK) PI3K kinases. Consistent with its mechanism of action, NVP-BKM120 decreases the cellular p-Akt levels in mechanistic models and relevant tumor cell lines. In a panel of 353 cell lines test, NVP-BKM120 showed preferential inhibition of tumor cells with PIK3CA mutations, rather than either KRAS or PTEN mutant models [1].

In vivo: NVP-BKM120 shows dose-dependent in vivo pharmacodynamic activity as measured by significant inhibition of p-Akt and tumor growth inhibition in mechanistic xenograft models. In addition, NVP-BKM120 behaves synergistically when combined with either targeted agents such as MEK or HER2 inhibitors or with cytotoxic agents such as docetaxel or temozolomide [1].

Clinical trial: A phase I dose-escalation study investigated the maximum-tolerated dose (MTD), safety, preliminary activity, PK, and PD of BKM120. This study demonstrates feasibility and proof-of-concept of class I PI3K inhibition in cancer patients. BKM120 at the MTD of 100 mg d-1 is safe and well tolerated, with a good PK profile, clear evidence of target inhibition, and preliminary antitumor activity [2].

Reference:

Protocol

Cell experiment:

Cell lines

MM cell lines (RPMI-8226, OPM1, MM.1S, OPM2 and H929)

Preparation method

The solubility of this compound in DMSO is >10 mM. General tips for obtaining a higher concentration: Please warm the tube at 37 °C for 10 minutes and/or shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Reacting conditions

IC50: 0.5-1μM, 48 hours

Applications

The effect of the pan-PI3K inhibition, mediated by increased concentrations of buparlisib on MM cell survival was tested by MTT assay. Buparlisib induced cell toxicity after 48 hr treatment in all MM cell lines tested; with an IC50 between 0.5 and 1 μM. In addition, buparlisib decreased the activation of signaling proteins
downstream of PI3K including pAkt, pS6R, pP70S6K, and p-mTOR in MM.1S cells in a dose dependent manner.

Animal experiment [3]:

<table>
<thead>
<tr>
<th>Animal models</th>
<th>Female SCID-Bg mice injected with MM.1S-GFP+/luc+ cells</th>
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<tbody>
<tr>
<td>Dosage form</td>
<td>Oral administration, 50 mg/kg, once a day for 5 weeks</td>
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<tr>
<td>Applications</td>
<td>Treatment of mice with buparlisib significantly decreased the rate of tumor progression compared with the vehicle treated group, as shown in representative images of the BLI and quantification of the BLI. These results were further confirmed by fluorescence microscopy, showing that the number of MM.1S-GFP+/luc+ cells present in the BM of mice treated with buparlisib decreased significantly compared with those present in the BM of mice treated with vehicle, as shown in representative images of immunofluorescence.</td>
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<td>Other notes</td>
<td>Please test the solubility of all compounds indoor, and the actual solubility may slightly differ with the theoretical value. This is caused by an experimental system error and it is normal.</td>
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Reference:

Product Citations


Caution

FOR RESEARCH PURPOSES ONLY.
Specific storage and handling information for each product is indicated on the product datasheet. Most ApexBio products are stable under the recommended conditions. Products are sometimes shipped at a temperature that differs from the recommended storage temperature. Short-term storage of many products are stable in the short-term at temperatures that differ from that required for long-term storage. We ensure that the product is shipped under conditions that will maintain the quality of the reagents. Upon receipt of the product, follow the storage recommendations on the product data sheet.