Product Data Sheet

Chemical Properties

Product Name: GS-9620
Cas No.: 1228585-88-3
M.Wt: 410.51
Formula: C22H30N6O2
Synonyms: GS 9620; GS9620
Chemical Name: 4-amino-2-butoxy-8-[[3-(pyrrolidin-1-ylmethyl)phenyl]methyl]-5,7-dihydropteridin-6-one
Canonical SMILES: CCCCCC1=NC2=C(C(=N1)N)NC(=O)CN2CC3=CC(=CC=C3)CN4CCCC4
Solubility: ≥20.55mg/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: Microbiology & Virology
Pathways: HBV
Description:

GS-9620 is an orally active TLR7 agonist with EC50 of 291 nM. [1] Toll-like receptor 7 (TLR7) is a pathogen recognition receptor which plays an important role in the detection of, and the innate immune response to, pathogens. TLR7 signaling is predominantly activated by viral single-stranded RNA and is localized within the endolysosomal compartments of plasmacytoid dendritic cells (pDCs) and B lymphocytes in humans and non-human primates. Activation of pDCs plays an important role in the progress of innate response to viral pathogens.
and are involved in the majority of type I interferon (IFN) production during the acute phase of an infection by viruses. The induction and secretion of endogenous IFNs, including IFN-α and IFN-β, also induce the development of an efficient adaptive immunological response. Interferons induce the transcription of interferon-stimulated genes (ISGs) which generate an antiviral state within cells, as well as induce the production of other cytokines and chemokines which facilitate intercellular communication and cellular trafficking. GS-9620 could activate TLR7 signaling in immune cells to induce clearance of virus infected cells. [1, 2]

GS-9620 selectively induces IFN-α, cytokines and chemokines. The minimum effective concentrations for IFN-α induction were similar in pDCs and in PBMCs from HCV-positive donors. GS-9620 demonstrates an EC50 of 291 nM for human TLR7, which is 30-fold selectivity over TLR8 with EC50 of 9 μM. [1]

GS-9620 was administered to HBV infected chimpanzees for 8 weeks with an interval of 1 week. Consequently, serum concentrations of HBV surface antigen and HBV antigen, and the number of HBV antigen–positive hepatocytes, were decreased as hepatocyte apoptosis increased. In a phase 1 clinical trial to evaluate the safety and tolerability of GS-9620, treatment of GS-9620 results in dose dependent increases in select cytokines, chemokines, and ISGs beginning at 2mg and is safe in a single dose up to 12mg. Increases in percentages of immunocytes, like T cells, B cells and NK cells, expressing CD69 were also noted in subjects receiving GS-9620 treatment. [2, 3]

Reference:

Protocol

Cell experiment:

Cell lines
Peripheral blood mononuclear cells (PBMCs) or plasmacytoid dendritic cells (pDCs)

Preparation method
Soluble in DMSO. 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
14 ~ 66 nM

Applications
In human and cynomolgus monkey PBMCs and/or pDCs, GS-9620 induced interferon (IFN)-alpha and other cytokines, with a minimum
effective concentration ranging from 14 to 66 nM in humans and with 5-fold less potency in monkeys.

**Animal experiment [3]:**

<table>
<thead>
<tr>
<th>Animal models</th>
<th>Cynomolgus monkeys</th>
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</thead>
<tbody>
<tr>
<td><strong>Dosage form</strong></td>
<td>single doses of 0.1 ~ 2.0 mg, daily doses of 0.1 ~ 1.0 mg for 7 days or every other day doses of 0.05 ~ 1.5 mg for 28 days; p.o.</td>
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<tr>
<td><strong>Applications</strong></td>
<td>In cynomolgus monkeys, GS-9620 was well tolerated even at the highest oral doses (1.5 mg every other day for 28 days). GS-9620 increased IFN-alpha, immunomodulatory cytokines, chemokines and peripheral blood cell IFN stimulated genes (ISGs) in a dose-dependent manner. In addition, there was no evidence of tachyphylaxis following every other day dosing, and oral administration resulted in limited systemic bioavailability but high oral absorption.</td>
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<td><strong>Other notes</strong></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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</tbody>
</table>

**Reference:**


**Caution**

**FOR RESEARCH PURPOSES ONLY.**

**NOT FOR HUMAN, VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

*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. Shortterm 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.*