CP-690550

JAK3 Inhibitor

Catalog # tlrl-cp69

For research use only

Version # 15K13-MM

PRODUCT INFORMATION

Content:

• 5 mg CP-690550

Storage and stability:

• CP-690550 is provided as a solid and shipped at room temperature. Store at -20 °C. Solid product is stable for 2 years when properly stored.

• Upon resuspension in DMSO, prepare aliquots of CP-690550 and store at -20 °C. Avoid repeated freeze-thaw cycles. Resuspended product is stable for 6 months when properly stored.

Quality control:

• Purity: ≥96% (LC)

• The absence of bacterial contamination (e.g. lipoproteins and endotoxins) is confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.

DESCRIPTION

CP-690550 (Tofacitinib) specifically inhibits JAK3, which has a pivotal role in cytokine signal transduction that governs lymphocyte survival, proliferation, differentiation, and apoptosis[1]. In experimental models, treatment with CP-690550 decreases IL-6 production, a critical cytokine that drives inflammation[2]. Moreover, it has been shown that CP-690550 also inhibits TNF-induced chemokine expression[3].

1. Wu W. & Sun X., 2012. Janus kinase 3: the controller and the controlled. Acta Biochim Biophys Sin. 44(3):187-96. **2. Milici A. *et al.*, 2008.** Cartilage preservation by inhibition of Janus kinase 3 in two rodent models of rheumatoid arthritis. Arthritis Res Ther. 10: R14. **3. Rosengren S. *et al.*, 2012.** The JAK inhibitor CP-690,550 (tofacitinib) inhibits TNF-induced chemokine expression in fibroblast-like synoviocytes: autocrine role of type I interferon. Ann Rheum Dis 71:440-7. **4. Changelian PS. et al., 2003.** Prevention of organ allograft rejection by a specific Janus kinase 3 inhibitor. Science. 302(5646):875-8.

CHEMICAL PROPERTIES

Synonym: Tofacitinib

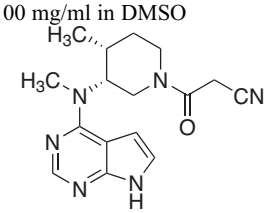
CAS number: 477600-75-2

Formula: $C_{16}H_{20}N_6O$

Molecular weight: 312.37

Solubility: 100 mg/ml in DMSO

Structure:



METHODS

Preparation of stock solution (20 mM)

1. Add 800 µl DMSO to 5 mg CP-690550 and vortex until complete solubilization.
2. Prepare aliquots and store stock solution at -20 °C. Further dilutions can be prepared using aqueous buffers. We do not recommend storing the aqueous solution for more than one day.

Working concentration: 10 nM - 4 µM (3 ng/ml - 1.25 µg/ml) for cell culture assays

Inhibition assay

Described below is a protocol to study the JAK/STAT pathway in the human THP-1 monocyte reporter cell line, THP1-Blue™ ISG cells.

1. Prepare a THP1-Blue™ ISG cell suspension at ~625,000 cells/ml.
2. Add 160 µl of cell suspension (~100,000 cells) per well.
3. Add 20 µl of CP-690550 at a final concentration of 10 nM - 4 µM and incubate at 37 °C for 1 hour.
4. Add 20 µl of sample per well of a flat-bottom 96-well plate.

Note: We recommend using a positive control such as IFN-α at 100 IU/ml.

5. Incubate the plate at 37 °C in a 5% CO_2 incubator for 18-24 hours.
6. Monitor SEAP production using a SEAP detection assay, such as QUANTI−Blue™.

PROTOCOLS

For reference only; as described in the indicated publications.

Cell Culture Assay[4]

Cells: Human T cells

Working concentration: 10 nM - 4 µM

Incubation time: 72 hours

Method: Cell proliferation assays

Animal Study[2]

Animal model: Male DBA/J1 mice

Dose: 1.5 - 15 mg/kg/day

Administration: Subcutaneous implantation of osmotic pumps

RELATED PRODUCTS

Product	Description	Cat. Code
AG490	JAK1 & JAK2 inhibitor	tlrl-ag4
AZD1480	JAK1 & JAK2 inhibitor	inh-ad14
Ruxolitinib	JAK1 & JAK2 inhibitor	tlrl-rux
THP1-Blue™ ISG cells	SEAP reporter cells	thp-isg

TECHNICAL SUPPORT
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