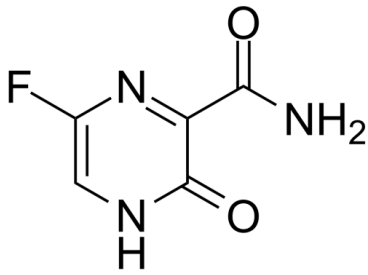
Data Sheet

Product Name:	Favipiravir
Cat. No.:	CS-0612
CAS No.:	259793-96-9
Molecular Formula:	C5H4FN3O2
Molecular Weight:	157.10
Target:	DNA/RNA Synthesis; Influenza Virus
Pathway:	Anti-infection; Cell Cycle/DNA Damage
Solubility:	H2O : 6.25 mg/mL (39.78 mM; Need ultrasonic); DMSO : ≥ 100 mg/mL (636.54 mM)



BIOLOGICAL ACTIVITY:

Favipiravir (T-705) is a novel viral **RNA polymerase** inhibitor, it is phosphoribosylated by cellular enzymes to its active form, Favipiravir-ribofuranosyl-5′-triphosphate (RTP). Favipiravir-RTP inhibits the influenza viral RNA-dependent RNA polymerase (**RdRP**) activity with **IC_{50}** of 341 nM. IC50 & Target: IC50: 341 nM (RdRP)[1] **In Vitro:** Favipiravir (T 705) is an antiviral drug that selectively inhibits the RNA-dependent RNA polymerase of influenza virus. Favipiravir (T 705) is a novel antiviral compound that selectively and potently inhibits the RNA-dependent RNA polymerase (RdRP) of influenza and many other RNA viruses. Favipiravir-RTP does not inhibit the human DNA polymerase α, β or γ with IC_{50}>1 mM. The IC_{50} for the human RNA polymerase II is 905 μM; Favipiravir is therefore 2,650 times more selective for the influenza virus RdRP, consistent with the lack of inhibition of host-cell DNA and RNA synthesis[1]. Favipiravir (T 705) acts as a pro-drug, its cytotoxicity is expected to be cell-line dependent. Favipiravir inhibits in a dose-dependent manner MNV-induced CPE (EC_{50}: 250±11 μM) and MNV RNA synthesis in cell culture (EC_{50}:124±42 μM). Despite this rather modest antiviral activity, Favipiravir (T 705) is able to completely inhibit norovirus replication at a concentration of 100 μg/mL, which is a concentration that has little or no adverse effect on the host cell (cell viability >80%)[2]. **In Vivo:** Favipiravir (T 705) (30 mg/kg/day, orally) improves survival compare to placebo. Favipiravir (T 705) also provides significant protection against the A/Duck/MN/1525/81(H5N1) virus at a dose of 33 mg/kg/day or more, regardless of the number of daily doses. When given 4 times a day, all mice survive[1].

PROTOCOL (Extracted from published papers and Only for reference)

Cell Assay: Favipiravir is dissolved in DMSO and stored, and then diluted with appropriate medium before use[2].[2]The antiviral activity of Favipiravir (T 705) is determined using an MTS-based CPE reduction assay in the MNV/RAW 264.7 cell line. To this end, RAW 264.7 cells are seeded (1×10^4 cells/well) in 96-well plates and infected with MNV at an MOI of 0,001 in the presence (or absence) of a dilution series of Favipiravir (T 705) (3.13-200 μg/mL). Following 3 days of incubation, i.e. until complete CPE is observed in infected untreated cells, cell culture supernatants are collected for quantification of viral RNA load by quantitative RT-PCR (qRT-PCR). For the MTS reduction assay an MTS/Phenazine methosulphate (PMS) stock solution (2 mg/mL MTS and 46 g/mL PMS in PBS at pH 6-6.5) is diluted 1/20 in MEM. To each well, 75 μL of MTS/PMS solution is added and the optical density (OD) is read at 498 nm 2 h later. The % CPE reduction is calculated as $[(OD_{treated})_{MNW}-OD_{VC}]/[OD_{CC}-OD_{VC}]\times100$, where OD_{CC} represents the OD of the uninfected untreated cells, whereas OD_{VC} and $(OD_{treated})_{CC}$ represent the OD of infected untreated cells and virus-infected cells treated with a compound concentration, respectively. The EC_{50} is defined as the compound concentration that protected 50% of cells from virus-induced CPE. Adverse effects of the molecule on the host cell are also assessed by means of the MTS-method, by exposing uninfected cells to the same concentrations of Favipiravir for 3 days. The % cell viability is calculated as $(OD_{treated}/OD_{CC})\times100$, where OD_{CC} is the OD of uninfected untreated cells and $OD_{treated}$ are uninfected cells treated with compound. The CC_{50} is defined as the compound concentration that reduces the number of viable cells by 50%. The selectivity index (SI) is calculated as CC_{50}/EC_{50}[2]. **Animal Administration:** [1]Mice[1]

Favipiravir (T 705) has also been shown to protect mice against lethal infection by a variety of influenza virus strains. When Favipiravir is orally administered 2 or 4 times a day for 5 days in mice infected with lethal doses of influenza virus A/Victoria/3/75(H3N2), A/Osaka/5/70(H3N2) or A/Duck/MN/1525/81(H5N1).

References:

[1]. Furuta Y, et al. Favipiravir (T-705), a novel viral RNA polymerase inhibitor. Antiviral Res. 2013 Nov;100(2):446-54.

[2]. Rocha-Pereira J, et al. Favipiravir (T-705) inhibits in vitro norovirus replication. Biochem Biophys Res Commun. 2012 Aug 10;424(4):777-80.

CAIndexNames:

2-Pyrazinecarboxamide, 6-fluoro-3,4-dihydro-3-oxo-

SMILES:

O=C(N)C1=NC(F)=CNC1=O

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