alpha-Amanitin

Cat. No.: HY-19610
CAS No.: 23109-05-9
Molecular Formula: C_{39}H_{54}N_{10}O_{14}S
Molecular Weight: 918.97
Target: DNA/RNA Synthesis; ADC Cytotoxin
Pathway: Cell Cycle/DNA Damage; Antibody-drug Conjugate/ADC Related
Storage: Powder -20°C 3 years

* The compound is unstable in solutions, freshly prepared is recommended.

**SOLVENT & SOLUBILITY**

**In Vitro**

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Mass Concentration</th>
<th>1 mg</th>
<th>5 mg</th>
<th>10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>H_{2}O</td>
<td>≥ 33.33 mg/mL (36.27 mM)</td>
<td>1.0882 mL</td>
<td>5.4409 mL</td>
<td>10.8817 mL</td>
</tr>
<tr>
<td></td>
<td>* “≥” means soluble, but saturation unknown.</td>
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Please refer to the solubility information to select the appropriate solvent.

**BIOLOGICAL ACTIVITY**

**Description**

alpha-Amanitin is the principal toxin of several deadly poisonous mushrooms, exerting its toxic function by inhibiting RNA-polymerase II.

**IC_{50} & Target**

Traditional Cytotoxic Agents

**In Vitro**

Alpha-Amanitin decreases TAF15 mRNA and TAF15 protein levels in MKN45 cells, and inhibits the RNAPII activity towards TAF15 mRNA\(^{[2]}\). alpha-Amanitin decreases cell viability by 14%, 21%, 41%, 44%, and 50% at concentrations of 100, 10, 1, 0.1, and 0.01 µg/mL, respectively. The LD_{50} of the alpha-Amanitin at 36 h is measured as 1 µg/mL. The total amount of protein within the cell at 24 h is significantly increased for the 1 µg/mL dose of alpha-Amanitin compared to the control\(^{[3]}\). Alpha-Amanitin dramatically decreases the expression of gap junctional genes (Gja1, Gja4 and Gjc1) and FSHr and LHr in cumulus cells\(^{[4]}\).

**In Vivo**

The intravenous LD_{50} dose of alpha-Amanitin is 0.327 mg/kg body weight after intravenous injection into BALB/c mice. After 12 h of alpha-Amanitin injection in caudal vein, the levels of WBC, RBC and HGB decrease significantly, while those of BUN and Crea increase significantly in serum. alpha-Amanitin inhibits some genes (Hsp90b1, Irx4, etc.).
whose encoded proteins regulate the RNA polymerase II activity. alpha-Amanitin down-regulates some proteins (Nmi, Trpc5, etc.) taking part in the transcription progress\[1\]. alpha-Amanitin has potent activity in DTC suppression. Mice injected with alpha-Amanitin (0.4 mg/kg, i.p.)-treated cells maintain their body weight, while those receiving a peritoneal injection of MKN45 cells show a constant decrease in body weight\[2\].

### PROTOCOL

#### Cell Assay \[3\]

The MTT assay is used to evaluate the overall functional integrity and viability of the cultured cells. The MCF-7 cells are put into 96-well plates (2×10^4 for each well), which are incubated for 24 h. The specific concentrations of alpha-Amanitin and β-Amanitin are added to the cell culture medium, and plates are incubated for an additional 36 h. MTT solution (1:10 ratio) and dimethyl sulfoxide (DMSO) (100 µL) are then added to the cell culture medium and plates are incubated overnight. The absorbance is measured at 570 nm on a plate reader. This experiment is repeated 3 times. The absorbance data are calculated as percentages according to the control group.

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

#### Animal Administration \[2\]

For tumorigenicity tests, six colonies (untreated) and DTCs derived from MKN45 cells are individually injected subcutaneously into the left and right side of the backs of six 6-week-old female nude mice (BALB/cAjcl-nu/nu). These mice are monitored for 49 days after the inoculation or until tumors reach 10 mm in the largest diameter, and are then euthanized. For the PC model, 1.0×10^6 MKN45 cells are injected intraperitoneally into six 6-week-old female nude mice (BALB/cAjcl-nu/nu). Mice are then treated with CIS (4.0 mg/kg, intraperitoneal administration) or a combination of CIS and alpha-Amanitin (0.4 mg/kg, intraperitoneal administration). For the combination treatment, alpha-Amanitin is given 24 hours before CIS. Body weight is monitored for 28 days after the treatment.

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### REFERENCES


