# Data Sheet

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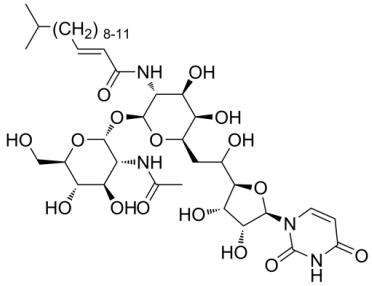
| **Product Name:** | Tunicamycin |
| **Cat. No.:** | CS-5779 |
| **CAS No.:** | 11089-65-9 |
| **Molecular Formula:** | $C_{39}H_{64}N_4O_{16}$ |
| **Molecular Weight:** | 844.94 (n=10) |
| **Target:** | Antibiotic; Bacterial; Fungal; Influenza Virus |
| **Pathway:** | Anti-infection |
| **Solubility:** | DMSO : 33.33 mg/mL (ultrasonic);$H_2O$ : 10 mg/mL (adjust pH to 12 with 1 M NaOH) |



## BIOLOGICAL ACTIVITY:

Tunicamycin is a mixture of homologous nucleoside antibiotic that inhibits **N-linked glycosylation** and blocks **GlcNAc phosphotransferase (GPT)**. Tunicamycin causes accumulation of unfolded proteins in cell endoplasmic reticulum (ER) and induces ER stress, and causes blocking of DNA synthesis and cell cycle arrest in G1 phase. Tunicamycin inhibits **gram-positive bacteria**, **yeasts**, **fungi**, and **viruses** and has anti-cancer activity[1][2][3].Tunicamycin increases exosome release in cervical cancer cells[4]. ***In Vitro:***Tunicamycin (2 μg/mL; 24 hours; CD44+/CD24- and original MCF7 cells) treatment increases the spliced XBP-1, ATF6 nuclear translocation level and CHOP protein expression in CD44+/CD24- and original MCF7 cells[1].
Tunicamycin-induced ER stress suppresses CD44+/CD24- phenotype cell subpopulation and in vitro invasion and accelerates tumorosphore formation. Under effect of Tunicamycin, the results show that inhibited invasion, increased cell death, suppressed proliferation and reduced migration in the CD44+/CD24- and CD44+/CD24- rich MCF7 cell culture[1]. ***In Vivo:***Tunicamycin (0.1 mg/kg or 0.5 mg/kg) treatment dramatically suppresses tumor growth in the $CD133^{+/-}$ MHCC97L cells xenograft model (BALB/c (***nu/nu***) mice)[2].

## References:

[1]. Hsu JL, et al. Tunicamycin induces resistance to camptothecin and etoposide in human hepatocellular carcinoma cells: role of cell-cycle arrest and GRP78. Naunyn Schmiedebergs Arch Pharmacol. 2009 Nov;380(5):373-82.

[2]. Han C, et al. Endoplasmic reticulum stress inhibits cell cycle progression via induction of p27 in melanoma cells. Cell Signal. 2013 Jan;25(1):144-9.

[3]. Hou H, et al. DPAGT1/Akt/ABCG2 pathway in mouse Xenograft models of human hepatocellular carcinoma. Mol Cancer Ther. 2013 Dec;12(12):2874-84.

[4]. Kathleen M McAndrews, et al. Mechanisms associated with biogenesis of exosomes in cancer. Mol Cancer. 2019 Mar 30;18(1):52.

## CAIndexNames:

(E)-N-((2S,3R,4R,5R,6R)-2-(((2R,3R,4R,5S,6R)-3-acetamido-4,5-dihydroxy-6-(hydroxymethyl)tetrahydro-2H-pyran-2-yl)oxy)-6-(2-((2R,3S,4R,5R)-5-(2,4-dioxo-3,4-dihydropyrimidin-1(2H)-yl)-3,4-dihydroxytetrahydrofuran-2-yl)-2-hydroxyethyl)-4,5-dihydroxytetrahydro-2H-pyran-3-yl)-5-methylhex-2-enamide

## SMILES:

O=C1NC(N([C@H]2[C@H](O)[C@H](O)[C@@H](C(C[C@@H]3[C@H](O)[C@H](O)[C@@H](NC(/C=C/[(CH2) 8-11]C(C)C)=O)[C@H](O[C@H]4O[C@H](

CO)[C@@H](O)[C@H](O)[C@H]4NC(C)=O)O3)O)O2)C=C1)=O

**Caution: Product has not been fully validated for medical applications. For research use only.**

Tel: 610-426-3128 Fax: 888-484-5008 E-mail: sales@ChemScene.com
Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA