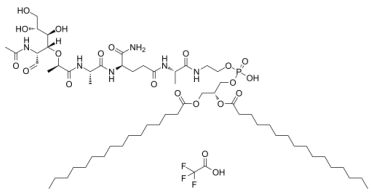
Data Sheet

Product Name:	Mifamurtide (TFA)
Cat. No.:	CS-0134697
Molecular Formula:	$C_{61}H_{110}F_3N_6O_{21}P$
Molecular Weight:	1351.52
Target:	NOD-like Receptor (NLR)
Pathway:	Immunology/Inflammation
Solubility:	DMSO : 25 mg/mL (18.50 mM; ultrasonic and warming and heat to 60°C)



BIOLOGICAL ACTIVITY:

Mifamurtide TFA (MTP-PE TFA), an analog of the muramyl dipeptide (MDP), is a nonspecific immunomodulator by stimulating the immune response activating macrophages and monocytes. Mifamurtide TFA, an orphan drug, is a specific ligand of NOD2 used as an insulin sensitizer. Mifamurtide TFA has the potential for osteosarcoma research[1][2][3]. **In Vitro:** Mifamurtide TFA (MTP-PE TFA; 100 μM) induces a reduction of MG63 cells number when co-cultured with macrophages[3].

Mifamurtide TFA (100 μM) increases both the M1 polarization marker iNOS and the M2 polarization marker CD206 mRNAs; both pro-inflammatory (IL-1β, IL-6) and anti-inflammatory (IL-4, IL-10) cytokines. Mifamurtide TFA increases the iron transporter DMT1 protein [3].

L-mifamurtide TFA (5, 5000 nM; for 48 hours) alone has no direct effect on the proliferation rate of the two osteosarcoma cell lines MOS-J and KHOS in vitro or in vivo[1].

Mifamurtide TFA acts as a nonspecific immunomodulator by activating macrophages and monocytes related to the upregulation of tumoricidal activity and secretion of pro-inflammatory cytokines including tumor necrosis factor (TNF)-a, interleukin (IL)-1, IL-6, IL-8, IL-12, nitric oxide (NO), prostaglandin E2 (PGE2) and PGD2[3].

In Vivo: Mifamurtide TFA (MTP-PE TFA; 1 mg/kg; i.v.; twice per week for 4 weeks) causes a trend of diminished spontaneous lung metastasis dissemination[1].

Mifamurtide TFA (50 μg/mouse) improves glucose tolerance during endotoxemia in mice. Mifamurtide TFA (equivalent to 20 μg MDP; 4 times per week for 5 weeks) improves glucose tolerance in HFD-fed mice without altering body mass[2].

References:

[1]. Kevin Biteau, et al. L-MTP-PE and zoledronic acid combination in osteosarcoma: preclinical evidence of positive therapeutic combination for clinical transfer. Am J Cancer Res. 2016 Feb 15;6(3):677-89.

[2]. Joseph F Cavallari, et al. Muramyl Dipeptide-Based Postbiotics Mitigate Obesity-Induced Insulin Resistance via IRF4. Cell Metab. 2017 May 2;25(5):1063-1074.e3.

[3]. Francesca Punzo, et al. Mifamurtide and TAM-like macrophages: effect on proliferation, migration and differentiation of osteosarcoma cells. Oncotarget. 2020 Feb 18;11(7):687-698.

CAIndexNames:

2,2,2-Trifluoroacetic acid compound with (2R)-3-(((((4R,5R,7R,10S,13R,18S)-13-carbamoyl-4-formyl-7,10,18-trimethyl-2,8,11,16,19-pentaoxo-5-((1R,2R)-1,

2,3-trihydroxypropyl)-6-oxa-3,9,12,17,20-pentaazadocosan-22-yl)oxy)(hydroxy)phosphoryl)oxy)propane-1,2-diyl dipalmitate (1:1)

SMILES:

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

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