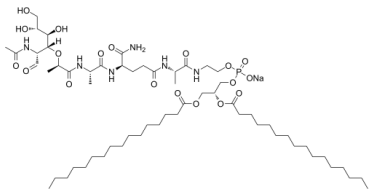
Data Sheet

Product Name:	Mifamurtide (sodium)
Cat. No.:	CS-0109375
CAS No.:	90825-43-7
Molecular Formula:	$C_{59}H_{108}N_6NaO_{19}P$
Molecular Weight:	1259.48
Target:	NOD-like Receptor (NLR)
Pathway:	Immunology/Inflammation
Solubility:	DMSO : 50 mg/mL (39.70 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

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

Mifamurtide sodium (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 sodium increases the iron transporter DMT1 protein[3].

L-mifamurtide sodium (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 sodium 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 sodium (MTP-PE sodium; 1 mg/kg; i.v.; twice per week for 4 weeks) causes a trend of diminished spontaneous lung metastasis dissemination[1].

Mifamurtide sodium (50 μg/mouse) improves glucose tolerance during endotoxemia in mice. Mifamurtide sodium (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:

L-Alaninamide, N-(N-acetylmuramoyl)-L-alanyl-D-α-glutaminyl-N-[(7R)-4-hydroxy-4-oxido-10-oxo-7-[(1-oxohexadecyl)oxy]-3,5,9-trioxa-4-phosphapentacos-

1-yl]-, sodium salt (1:1)

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

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