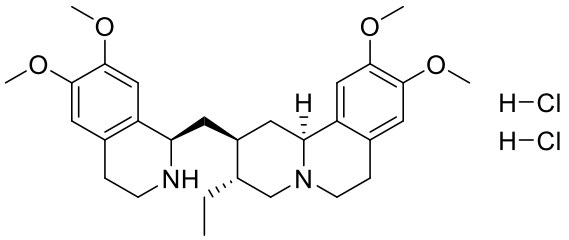
Product data sheet

MedKoo Cat#: 531018 Name: Emetine Hydrochloride CAS#: 316-42-7 (HCl) Chemical Formula: $C_{29}H_{42}Cl_2N_2O_4$ Molecular Weight: 553.565	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Emetine is a drug used as both an anti-protozoal and to induce vomiting. It is produced from the ipecac root. It takes its name from its emetic properties. Emetine protects mice from enterovirus infection by inhibiting viral translation. Emetine Synergizes with Cisplatin to Enhance Anti-Cancer Efficacy against Lung Cancer Cells. Emetine exhibits anticancer activity in breast cancer cells as an antagonist of Wnt/β-catenin signaling. Emetine inhibits Zika and Ebola virus infections through two molecular mechanisms: inhibiting viral replication and decreasing viral entry.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
H2O	55.36	100.0

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.81 mL	9.03 mL	18.06 mL
5 mM	0.36 mL	1.81 mL	3.61 mL
10 mM	0.18 mL	0.90 mL	1.81 mL
50 mM	0.04 mL	0.18 mL	0.36 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Sun Q, Fu Q, Li S, Li J, Liu S, Wang Z, Su Z, Song J, Lu D. Emetine exhibits anticancer activity in breast cancer cells as an antagonist of Wnt/β-catenin signaling. Oncol Rep. 2019 Nov;42(5):1735-1744. doi: 10.3892/or.2019.7290. Epub 2019 Aug 22. PMID: 31436297; PMCID: PMC6775799.
2. Cornet-Masana JM, Moreno-Martínez D, Lara-Castillo MC, Nomdedeu M, Etxabe A, Tesi N, Pratcorona M, Esteve J, Risueño RM. Emetine induces chemosensitivity and reduces clonogenicity of acute myeloid leukemia cells. Oncotarget. 2016 Apr 26;7(17):23239-50. doi: 10.18632/oncotarget.8096. PMID: 26992240; PMCID: PMC5029623.

In vivo study

1. Cornet-Masana JM, Moreno-Martínez D, Lara-Castillo MC, Nomdedeu M, Etxabe A, Tesi N, Pratcorona M, Esteve J, Risueño RM. Emetine induces chemosensitivity and reduces clonogenicity of acute myeloid leukemia cells. Oncotarget. 2016 Apr 26;7(17):23239-50. doi: 10.18632/oncotarget.8096. PMID: 26992240; PMCID: PMC5029623.
2. Aoki T, Shimada K, Sakamoto A, Sugimoto K, Morishita T, Kojima Y, Shimada S, Kato S, Iriyama C, Kuno S, Harada Y, Tomita A, Hayakawa F, Kiyoi H. Emetine elicits apoptosis of intractable B-cell lymphoma cells with MYC rearrangement through inhibition of glycolytic metabolism. Oncotarget. 2017 Feb 21;8(8):13085-13098. doi: 10.18632/oncotarget.14393. PMID: 28055963; PMCID: PMC5355079.

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7. Bioactivity

Biological target:

Emetine is a RNA polymerase inhibitor that inhibits SARS-CoV-2 replication (EC50 = 460 nM)

In vitro activity

To further investigate the mechanism of the effect of emetine on the Wnt pathway, 293T cells were transfected with a Wnt1 expression plasmid. Overexpression of Wnt1 resulted in enhanced levels of phosphorylated LRP6, total LRP6, DVL2, activated β-catenin and cytosolic β-catenin (Fig. 2). Treatment with nanomolar concentrations of emetine significantly decreased the expression levels of phosphorylated LRP6, total LRP6, phosphorylated DVL2, active β-catenin and cytosolic β-catenin (Fig. 2). Notably, the extent of reduction in total and phosphorylated LRP6 was similar upon emetine treatment, suggesting that emetine may downregulate LRP6 expression, but not its phosphorylation. These findings indicated that emetine inhibits Wnt/β-catenin signaling by targeting LPR6 and DVL2.

Reference: Oncol Rep. 2019 Nov; 42(5): 1735–1744. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6775799/

In vivo activity

In order to confirm the anti-leukemia activity of emetine, AML-bearing immunodeficient NSG mice were treated daily with the vehicle control or emetine (1 mg/kg weight) for 7 days, starting 7 days after transplantation when the leukemia was already established in the recipient mouse. At day 21, mice were analyzed for the presence of human AML cells in the bone marrow. Mice were left untreated 7 days after finishing the treatment regimen to allow AML cells to regenerate the disease. A significant reduction in the frequency of human AML cells in bone marrow was observed in emetine-treated mice compared to vehicle-control treated mice (Figure5B). In fact, the colonies generated from emetine-treated engrafted human leukemia bone marrow cells displayed a reduced cellularity as compared to control samples (Figure5C). Taken together, emetine reduced both leukemia burden in vivo and the clonogenic capacity of leukemic cells upon treatment.

Reference: Oncotarget. 2016 Apr 26; 7(17): 23239–23250. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5029623/