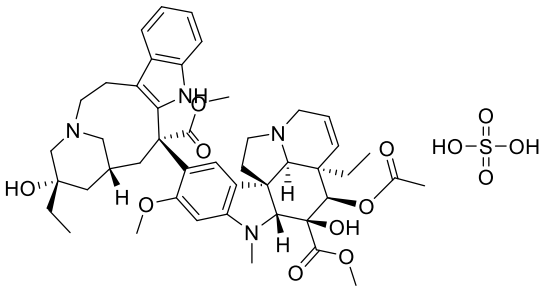
Product data sheet

MedKoo Cat#: 100911 Name: Vinblastine sulfate CAS#: 143-67-9 (sulfate) Chemical Formula: $C_{46}H_{60}N_4O_{13}S$ Exact Mass: 908.38776 Molecular Weight: 909.05	
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:
Vinblastine is a natural alkaloid isolated from the plant Vinca rosea Linn. Vinblastine binds to tubulin and inhibits microtubule formation, resulting in disruption of mitotic spindle assembly and arrest of tumor cells in the M phase of the cell cycle. This agent may also interfere with amino acid, cyclic AMP, and glutathione metabolism; calmodulin-dependent Ca++ -transport ATPase activity; cellular respiration; and nucleic acid and lipid biosynthesis.

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
DMSO	44	48.40
Water	50	55

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.10 mL	5.50 mL	11.00 mL
5 mM	0.22 mL	1.10 mL	2.20 mL
10 mM	0.11 mL	0.55 mL	1.10 mL
50 mM	0.02 mL	0.11 mL	0.22 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. Calviño E, Tejedor MC, Sancho P, Herráez A, Diez JC. JNK and NFκB dependence of apoptosis induced by vinblastine in human acute promyelocytic leukaemia cells. Cell Biochem Funct. 2015 Jun;33(4):211-9. doi: 10.1002/cbf.3105. Epub 2015 Apr 23. PMID: 25914345.

In vivo study

1. Avlasevich SL, Labash C, Torous DK, Bemis JC, MacGregor JT, Dertinger SD. In vivo pig-a and micronucleus study of the prototypical aneugen vinblastine sulfate. Environ Mol Mutagen. 2018 Jan;59(1):30-37. doi: 10.1002/em.22122. Epub 2017 Aug 19. PMID: 28833575; PMCID: PMC5773054.

7. Bioactivity
Biological target:

Vinblastine sulfate (NSC49842, Vincaleukoblastine sulfate salt, 29060-LE, Exal, Velban, Velbe) inhibits microtubule formation and suppresses nAChR activity with IC50 of 8.9 μM in a cell-free assay, used to treat certain kinds of cancer.

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In vitro activity

In NB4 cells, vinblastine produces alteration of p53 and DNA fragmentation. Vinblastine treatment had an antiproliferative effect via the induction of apoptosis producing Bax/Bcl-2 imbalance. Vinblastine treatment suppressed NFκB expression and depressed NFκB-DNA binding activity while maintaining JNK activation that subsequently resulted in apoptotic response through caspase-dependent pathway. This provides a possible anti-cancer mechanism of vinblastine action on NB4 cells by deregulation of the intracellular signalling cascade affecting to JNK activation and NFκB expression. Moreover, JNK activation and NFκB depression can be very significant factors in apoptosis induction by vinblastine.

Reference: Cell Biochem Funct. 2015 Jun;33(4):211-9. https://onlinelibrary.wiley.com/doi/abs/10.1002/cbf.3105

In vivo activity

Male Sprague Dawley rats were treated for twenty-eight consecutive days with vinblastine dose levels from 0.0156 to 0.125 mg/kg/day. Micronucleated reticulocyte frequencies in peripheral blood were determined at Days 4 and 29, and mutant cell frequencies were determined at Days -4, 15, 29, and 46. Vinblastine affected reticulocyte frequencies, with reductions noted during the treatment phase and increases observed following cessation of treatment. Micronucleated reticulocyte frequencies were significantly elevated at Day 4 in the high dose group. Although a statistically significant increase in mutant reticulocyte frequencies were found for one dose group at a single time point (Day 46), it was not deemed biologically relevant because there was no analogous finding in mutant RBCs, it occurred at the lowest dose tested, and only 1 rat exceeded an upper bound tolerance interval established with historical negative control rats. Therefore, whereas micronucleus induction reflects vinblastine's well-established aneugenic effect on hematopoietic cells, the lack of a Pig-a response indicates that this tubulin-binding agent does not cause appreciable mutagenicity in this same cell type.

Reference: Environ Mol Mutagen. 2018 Jan;59(1):30-37. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/28833575/