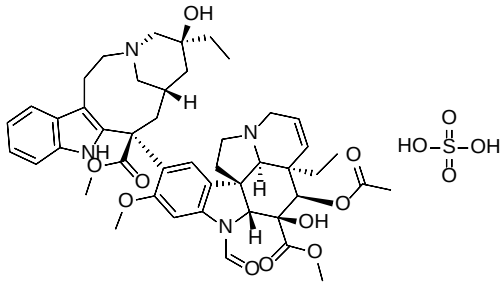
Product data sheet

MedKoo Cat#: 100920 Name: Vincristine sulfate CAS#: 2068-78-2 (sulfate) Chemical Formula: $C_{46}H_{56}N_4O_{10}$ Molecular Weight: 824.96	
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:

Vincristine sulfate is the sulfate salt of a natural alkaloid isolated from the periwinkle plant of the oleander family with antimitotic and antineoplastic activities. Vincristine binds irreversibly to microtubules and spindle proteins in S phase of the cell cycle and interferes with the formation of the mitotic spindle, thereby arresting tumor cells in metaphase. This agent also depolymerizes microtubules and 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	62.50	75.76
Water	83.33	101.01
DMF	3.0	3.64
PBS (pH 7.2)	2.0	2.42

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.21 mL	6.06 mL	12.12 mL
5 mM	0.24 mL	1.21 mL	2.42 mL
10 mM	0.12 mL	0.61 mL	1.21 mL
50 mM	0.02 mL	0.12 mL	0.24 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. Chao MW, Lai MJ, Liou JP, Chang YL, Wang JC, Pan SL, Teng CM. The synergic effect of vincristine and vorinostat in leukemia in vitro and in vivo. J Hematol Oncol. 2015 Jul 10;8:82. doi: 10.1186/s13045-015-0176-7. PMID: 26156322; PMCID: PMC4504084.

In vivo study

1. Sonekatsu M, Kanno S, Yamada H, Gu JG. Selective impairment of slowly adapting type 1 mechanoreceptors in mice following vincristine treatment. Neurosci Lett. 2020 Nov 1;738:135355. doi: 10.1016/j.neulet.2020.135355. Epub 2020 Sep 6. PMID: 32905836; PMCID: PMC7584766.

7. Bioactivity

Biological target: Vincristine sulfate is an antitumor vinca alkaloid which inhibits microtubule formation in mitotic spindle and binds to microtubules with a Ki of 85 nM.

Product data sheet

In vitro activity

The microtubule-depolymerizing agent vincristine is widely used in the treatment of acute leukemia. In order to decrease toxicity and chemoresistance of vincristine, the effects of combination vincristine and vorinostat (suberoylanilide hydroxamic acid (SAHA)), a pan-histone deacetylase inhibitor, on human acute T cell lymphoblastic leukemia cells were investigated. Cell viability showed that the combination of vincristine and SAHA exhibited greater cytotoxicity with an IC50 value of 0.88 nM, compared to each drug alone, 3.3 and 840 nM. This combination synergically induced G2/M arrest, followed by an increase in cell number at the sub-G1 phase and caspase activation. These findings indicate that the combination of vincristine and SAHA on T cell leukemic cells resulted in a change in microtubule dynamics contributing to M phase arrest followed by induction of the apoptotic pathway.

Reference: J Hematol Oncol. 2015 Jul 10;8:82. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4504084/

In vivo activity

Whisker hair follicles are tactile organs in non-primate mammals which are functionally equivalent to human fingertips. Mouse whisker hair follicles were used as a model system and the pressure-clamped single-fiber recording technique was applied in order to explore how vincristine treatment affect mechanoreceptors in whisker hair follicles. In vivo treatment of mice with vincristine impaired whisker tactile behavioral responses. The pressure-clamped single-fiber recordings made from whisker hair follicle afferent nerves showed that mechanical stimulations evoked three types of mechanical responses, rapidly adapting response (RA), slowly adapting type 1 response (SA1) and slowly adapting type 2 response (SA2). Vincristine treatment significantly reduced SA1 responses but did not significantly affect RA and SA2 responses. These findings suggest that SA1 mechanoreceptors were selectively impaired by vincristine leading to the impairment of in vivo whisker tactile behavioral responses.

Reference: Neurosci Lett. 2020 Nov 1;738:135355.
https://www.sciencedirect.com/science/article/abs/pii/S030439402030625X?via%3Dihub

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.