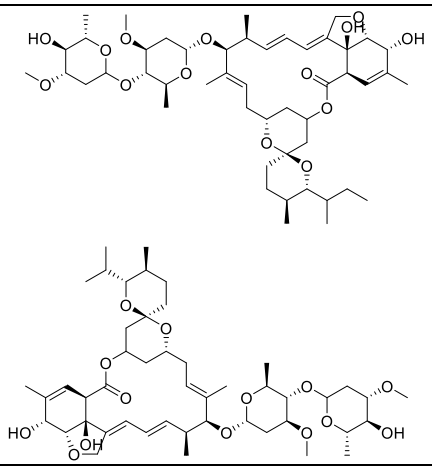
Product data sheet

MedKoo Cat#: 326779 Name: Ivermectin CAS#: 70288-86-7 Chemical Formula: $C_{48}H_{74}O_{14}$. $C_{47}H_{72}O_{14}$ Exact Mass: 1736.0001 Molecular Weight: 1736.18	
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:
Ivermectin is a medication that is effective against many types of parasites. It is used to treat head lice, scabies, river blindness, strongyloidiasis, and lymphatic filariasis, among others. Ivermectin and other avermectins (insecticides most frequently used in home-use ant baits) are macrocyclic lactones derived from the bacterium Streptomyces avermitilis. Ivermectin kills by interfering with nervous system and muscle function, in particular by enhancing inhibitory neurotransmission. Ivermectin is a mixture of mostly avermectin H2B1a (CAS# 71827-03-7) with some avermectin H2B1b (CAS# 70209-81-3), which are macrolides from STREPTOMYCES avermitilis.

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	75.0	43.20

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	0.58 mL	2.88 mL	5.76 mL
5 mM	0.12 mL	0.58 mL	1.15 mL
10 mM	0.06 mL	0.29 mL	0.58 mL
50 mM	0.01 mL	0.06 mL	0.12 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. Jiang L, Wang P, Sun YJ, Wu YJ. Ivermectin reverses the drug resistance in cancer cells through EGFR/ERK/Akt/NF-κB pathway. J Exp Clin Cancer Res. 2019 Jun 18;38(1):265. doi: 10.1186/s13046-019-1251-7. PMID: 31215501; PMCID: PMC6580523.
2. Chen L, Bi S, Wei Q, Zhao Z, Wang C, Xie S. Ivermectin suppresses tumour growth and metastasis through degradation of PAK1 in oesophageal squamous cell carcinoma. J Cell Mol Med. 2020 May;24(9):5387-5401. doi: 10.1111/jcmm.15195. Epub 2020 Mar 31. PMID: 32237037; PMCID: PMC7205794.

In vivo study

1. Jiang L, Wang P, Sun YJ, Wu YJ. Ivermectin reverses the drug resistance in cancer cells through EGFR/ERK/Akt/NF-κB pathway. J Exp Clin Cancer Res. 2019 Jun 18;38(1):265. doi: 10.1186/s13046-019-1251-7. PMID: 31215501; PMCID: PMC6580523.

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2. Diao H, Cheng N, Zhao Y, Xu H, Dong H, Thamm DH, Zhang D, Lin D. Ivermectin inhibits canine mammary tumor growth by regulating cell cycle progression and WNT signaling. BMC Vet Res. 2019 Aug 2;15(1):276. doi: 10.1186/s12917-019-2026-2. PMID: 31375107; PMCID: PMC6679554.

7. Bioactivity

Biological target:

Ivermectin (MK-933) is a broad-spectrum anti-parasite agent that is a specific inhibitor for Impα/β1-mediated nuclear import and bovine herpesvirus1 (BoHV-1) and has potent antiviral activity towards both HIV-1 and dengue virus.

In vitro activity

It was next explored whether ivermectin suppresses the migration and invasion, two important characteristic features involved in cancer metastasis including ESCC. In wound healing assay, upon treatment with 2.5 μmol/L ivermectin for 24 hours, the migration of KYSE150 and KYSE30 cells that was dramatically suppressed, the inhibition was further enhanced after incubation with ivermectin for 48 hours (Figure 3A). Consistent with these results, transwell migration assay revealed that the migrative ability was greatly attenuated by ivermectin at the concentration of 2.5 μmol/L in both tested ESCC cell lines (Figure 3B). It was also explored whether ivermectin has a inhibitory effect on ESCC cell invasion by using transwell invasion assay. Interestingly, the data showed that ivermectin strongly diminished the invasion of KYSE150 and KYSE30 cells, compared with corresponding control groups (Figure 3C). Consistently, the protein levels of MMP‐9 and MMP‐2, two important family members of matrix metalloproteinases (MMPs), were greatly down‐regulated in a dose‐dependent manner in both KYSE150 and KYSE30 cells (Figure 3D). Collectively, these data suggest that ivermectin effectively suppresses the migration and invasion of ESCC cells.

Reference: J Cell Mol Med. 2020 May; 24(9): 5387–5401. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7205794/

In vivo activity

To evaluate the effect of ivermectin on canine mammary tumor growth in vivo, CIPp cells were injected subcutaneously into BALB/c nude mice to establish xenograft tumors. After 3 weeks of ivermectin administration by intraperitoneal injection, all xenograft tumors were collected (Fig. 5a and Additional file 1: Figure S1A). The volume of tumors in ivermectin treatment group was lower than that in the control group at the end of treatment (Fig. 5b and Additional file 1: Figure S1B). Furthermore, immunohistochemistry analysis with the proliferation marker Ki67 was performed in tumor tissues (Fig. 5c and Additional file 1: Figure S1C), and a significant difference was observed between these two groups (Fig. 5d and Additional file 1: Figure S1D) ($P<0.01$). These data were in concordance with our in vitro data, and confirmed the inhibition of tumor growth by ivermectin in canine mammary tumor cells.

Reference: BMC Vet Res. 2019; 15: 276. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6679554/

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.