# Emamectin Benzoate

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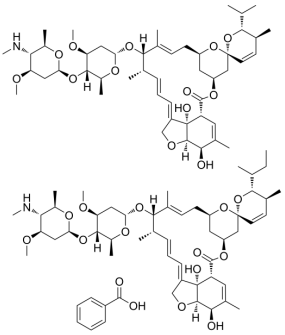
| **Cat. No.:** | HY-B0837 |
| **CAS No.:** | 155569-91-8 |
| **Molecular Formula:** | $C_{49}H_{75}NO_{13}.C_7H_6O_2$ |
| **Target:** | GABA Receptor; Parasite; Apoptosis; Reactive Oxygen Species |
| **Pathway:** | Membrane Transporter/Ion Channel; Neuronal Signaling; Anti-infection; Apoptosis; Immunology/Inflammation; Metabolic Enzyme/Protease; NF-κB |
| **Storage:** | 4°C, sealed storage, away from moisture<br>* In solvent : -80°C, 6 months; -20°C, 1 month (sealed storage, away from moisture) |



## SOLVENT & SOLUBILITY

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| **In Vitro** | DMSO : 100 mg/mL (Need ultrasonic) |
| **In Vivo** | 1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline<br>Solubility: ≥ 2.08 mg/mL (Infinity mM); Clear solution<br>2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)<br>Solubility: ≥ 2.08 mg/mL (Infinity mM); Clear solution<br>3. Add each solvent one by one: 10% DMSO >> 90% corn oil<br>Solubility: ≥ 2.08 mg/mL (Infinity mM); Clear solution |

## BIOLOGICAL ACTIVITY

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| **Description** | Emamectin Benzoate (MK-244) is an orally active nervoussystem toxicant by binding g-aminobutyric (GABA) receptor in insects. Emamectin Benzoate is one of semi-synthetic derivative of Avermectin (HY-15311) with a broadspectrum of insecticidal and acaricidal activity. Emamectin Benzoate induces ROS-mediated DNA damage and cell apoptosis. Emamectin Benzoate, a mixture of the natural Emamectin B1a benzoate and Emamectin B1b benzoate, has the main component of Emamectin B1a benzoate[1][2]. |
| **$IC_{50}$ & Target** | Mite |
| **In Vitro** | Emamectin Benzoate (MK-244; 2.5-40 μM; 12 and 24 h) decreases cell viability in a time- and dose-dependent manner[1].<br>?Emamectin Benzoate (2.5-20 μM; 24 hours) induces apoptosis and DNA damage in 16HBE cells. Emamectin Benzoate induces ROS generation in 16HBE cells[1].<br>?Emamectin Benzoate (2.5-20 μM; 12 hours) increases the amounts of cytochrome-c, caspase-3, cas-pase-9, cleaved-PARP, Bax/Bcl-2[1].<br>?Emamectin Benzoate (2.5, 5, 10, 15 μM; 72 h) inhibits cell viability with an $IC_{50}$ of 3.72 μM in Trichoplusia Tn5B1-4 cell. Emamectin Benzoat induces chromatin condensation in nuclei and cell apoptosis[2].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only.<br>Cell Viability Assay[1]<br>Cell Line: human normal bronchial epithelial cell line 16HBE |

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| Concentration: | 2.5, 5, 7.5,10,15, 20, 40 μM |
| Incubation Time: | 12 and 24 hours |
| Result: | Decreased cell viability in a time- and dose-dependent manner wirh $IC_{50}$s of 11.88 μM and 9.67 μM in 12 and 24 hours, respectively. |

Apoptosis Analysis[1]

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| Cell Line: | human normal bronchial epithelial cell line 16HBE |
| Concentration: | 2.5, 5, 10, 20 μM |
| Incubation Time: | 24 hours |
| Result: | Induced apoptosis and caused chromatin shrinkage and nuclear fragmentation. |

Western Blot Analysis[1]

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| Cell Line: | human normal bronchial epithelial cell line 16HBE |
| Concentration: | 2.5, 5, 10, 20 μM |
| Incubation Time: | 12 hours |
| Result: | Increased the amounts of cytochrome-c, caspase-3, cas-pase-9, cleaved-PARP, Bax/Bcl-2. |

**In Vivo**

Emamectin Benzoate (MK-244; oral; 25-100 mg/kg/day; for 14 days) causes a marked induction of oxidative damage in liver tissue[3].

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| Animal Model: | 10 weeks old Swiss albino male mice (25-30 g)[3] |
| Dosage: | 25, 50, 100 mg/kg |
| Administration: | Oral; daily; for 14 days |
| Result: | Caused a marked induction of oxidative damage in liver tissue as demonstrated by an increased level of TBARS and reduced GSH level. |

## REFERENCES


[1]. Chenguang Niu, et al. Toxic effects of the Emamectin Benzoate exposure on cultured human bronchial epithelial (16HBE) cells. Environ Pollut. 2020 Feb;257:113618.

[2]. Shaorong Luan, et al. Emamectin benzoate induces ROS-mediated DNA damage and apoptosis in Trichoplusia Tn5B1-4 cells. Chem Biol Interact. 2017 Aug 1;273:90-98.

[3]. Özge Temiz, et al. Biopesticide emamectin benzoate in the liver of male mice: evaluation of oxidative toxicity with stress protein, DNA oxidation, and apoptosis biomarkers. Environ Sci Pollut Res Int. 2020 Jun;27(18):23199-23205.

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

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