



Maduramicin Ammonium PRODUCT DATA SHEET

issue date 01/06/2020

Product Name:	Maduramicin Ammonium
Product Number:	M047
CAS Number:	84878-61-5
Molecular Formula:	$C_{47}H_{83}NO_{17}$
Molecular Weight:	934.2
Form:	solid
Appearance:	White solid
Solubility:	soluble in ethanol, methanol, DMF and DMSO, but has limited solubility in water.
Storage Conditions:	-20°C
Description:	<p>Maduramicin Ammonium is prepared from Maduramicin by taking advantage of the acidic carboxylic acid which ionizes and readily forms a salt complex in Ammonium Hydroxide solutions. This formulation is preferred in animals to enhance growth and prevent coccidiosis. Maduramicin is an ionophore, forming complexes with monovalent cations, with a higher affinity for K^+ than Na^+. Maduramicin Ammonium is soluble in ethanol, methanol, DMF and DMSO, but has limited solubility in water.</p> <p>We also offer:</p> <ul style="list-style-type: none">• Maduramicin (M046)

Mechanism of Action:	<p>Maduramicin can form complexes with cations (particularly Na^+, K^+ and Ca^{2+}), thereby promoting their transport across the cell membrane and increasing the osmotic pressure in the coccidia, which inhibits certain mitochondrial functions such as substrate oxidation and ATP hydrolysis, eventually leading to cell death in the protozoa.</p> <p>In cell culture studies, Maduramicin was found to cause accumulation of the cells at G0/G1 phase of the cell cycle, and induce cellular apoptosis. It can also downregulate protein expression of cyclin D1, cyclin-dependent kinases, and upregulate expression of CDK inhibitors.</p>
Spectrum:	<p>It is effective against Gram-positive bacteria, and exhibits a broad-spectrum of anticoccidial activity against the most frequently occurring <i>Eimeria</i> species, and is also active <i>Cryptosporidium</i> and <i>Treponema</i>.</p>

Microbiology Applications Maduramicin is currently used to combat coccidiosis in poultry.

References:

Chen X et al (2014) Maduramicin inhibits proliferation and induces apoptosis in myoblast cells. PloS One. 9(12):e115652

Liu CM et al (1983) Novel polyether antibiotics X-14868A, B, C, and D produced by a Nocardia. Discovery, fermentation, biological as well as ionophore properties and taxonomy of the producing culture. J. Antibiot. 36:343

Maxim I et al (2016) Maduramicin rapidly eliminates malaria parasites and potentiates the gametocytocidal activity of the pyrazoleamide PA21A050. Antimicrob. Agents. Chemother 60(3): 1492-1499

Mead JR et al (1995) Evaluation of maduramicin and alborixin in a SCID mouse model of chronic cryptosporidiosis. Antimicrob. Agents. Chemother. 39 (4) 854-858

You X et al (1996) A chemiluminescence immunoassay for evaluation of *Cryptosporidium parvum* growth *in vitro*. FEMS Microbiol Lett 136(3):251-256

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