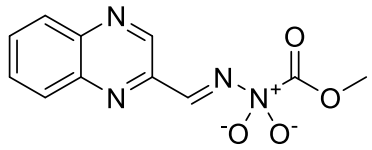
Product data sheet

MedKoo Cat#: 540058 Name: Carbadox CAS#: 6804-07-5 Chemical Formula: $C_{11}H_9N_4O_4$ Exact Mass: 261.0629 Molecular Weight: 261.21	
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:
Carbadox is a livestock anitbiotic and growth promoter. It is particularly effective in treating swine dysentery and enteritis. However, its use has been prohibited in the UK following reports of carcinogenicity and mutagenicity.

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	3.57	13.61

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.83 mL	19.14 mL	38.28 mL
5 mM	0.77 mL	3.83 mL	7.66 mL
10 mM	0.38 mL	1.91 mL	3.83 mL
50 mM	0.08 mL	0.38 mL	0.77 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. Chen Q, Tang S, Jin X, Zou J, Chen K, Zhang T, Xiao X. Investigation of the genotoxicity of quinocetone, carbadox and olaquindox in vitro using Vero cells. Food Chem Toxicol. 2009 Feb;47(2):328-34. doi: 10.1016/j.fct.2008.11.020. Epub 2008 Nov 21. PMID: 19061932.

In vivo study

1. Looft T, Allen HK, Casey TA, Alt DP, Stanton TB. Carbadox has both temporary and lasting effects on the swine gut microbiota. Front Microbiol. 2014 Jun 10;5:276. doi: 10.3389/fmicb.2014.00276. PMID: 24959163; PMCID: PMC4050737.

7. Bioactivity
Biological target:

Carbadox is a quinoxaline-di-N-oxide antibiotic compound.

In vitro activity

The results of MTT assay demonstrate a dose-dependent decrease in mitochondrial activity in Vero cells at all concentrations of Carbadox. Treatment with Carbadox at the highest concentration of 160 μg/mL results in cell viability down to only 12%. Cells following Carbadox treatment show a dose-dependent increase of the DNA migration ($p<0.01$). The nuclear division index (NDI) reduces markedly with the increase doses of Carbadox.

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Reference: Food Chem Toxicol. 2009 Feb;47(2):328-34. https://linkinghub.elsevier.com/retrieve/pii/S0278-6915(08)00653-4

In vivo activity

Alpha diversities (Shannon diversity, Heips evenness, and inverse Simpson indices) of samples from medicated piglets compare to non-medicated piglets are significantly different at 2, 3, and 4 days after continuous Carbadox, but not different in either late Carbadox or at any time during the withdrawal period. Analysis of the community structure of bacteria in animals shows significant differences at days 3 and 4 of early Carbadox treatment ([R=0.32, p=0.015] and [R=0.54, p=0.003], respectively), but not before starting antibiotic treatment (p=0.82). No significant differences in E. coli colony forming units (CFUs) are observed during the Carbadox-treatment period of the study or late in the withdrawal period. E. coli CFUs are significantly different between the medicated and non-medicated groups on day 2 after the withdrawal of Carbadox.

Reference: Front Microbiol. 2014 Jun 10;5:276. https://www.ncbi.nlm.nih.gov/pmc/articles/pmid/24959163/