

# Product data sheet



MedKoo Cat#: 573642 Name: Novobiocin sodium CAS: 1476-53-5 (Na) Chemical Formula: C <sub>31</sub> H <sub>35</sub> N <sub>2</sub> NaO <sub>11</sub> Exact Mass: 634.2139 Molecular Weight: 634.6138		
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:

Novobiocin sodium is an antibiotic compound derived from *Streptomyces niveus*. It has a chemical structure similar to coumarin. Novobiocin binds to DNA gyrase, and blocks adenosine triphosphatase (ATPase) activity.

## 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	65.0	102.42
Ethanol	100.0	157.58
Water	83.33	131.31

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.58 mL	7.88 mL	15.76 mL
5 mM	0.32 mL	1.58 mL	3.15 mL
10 mM	0.16 mL	0.79 mL	1.58 mL
50 mM	0.03 mL	0.16 mL	0.32 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. Singh G, Jayanarayan KG, Dey CS. Novobiocin induces apoptosis-like cell death in topoisomerase II over-expressing arsenite resistant *Leishmania donovani*. *Mol Biochem Parasitol*. 2005 May;141(1):57-69. doi: 10.1016/j.molbiopara.2005.01.014. PMID: 15811527.

2. Yun BG, Huang W, Leach N, Hartson SD, Matts RL. Novobiocin induces a distinct conformation of Hsp90 and alters Hsp90-cochaperone-client interactions. *Biochemistry*. 2004 Jun 29;43(25):8217-29. doi: 10.1021/bi0497998. PMID: 15209518.

### In vivo study

1. Llanos MA, Enrique N, Sbaraglini ML, Garofalo FM, Talevi A, Gavernet L, Martín P. Structure-Based Virtual Screening Identifies Novobiocin, Montelukast, and Cinnarizine as TRPV1 Modulators with Anticonvulsant Activity In Vivo. *J Chem Inf Model*. 2022 Jun 27;62(12):3008-3022. doi: 10.1021/acs.jcim.2c00312. Epub 2022 Jun 13. PMID: 35696534.

2. Rodríguez-Cerrato V, Del Prado G, Huelves L, Naves P, Ruiz V, García E, Ponte C, Soriano F. Comparative efficacy of novobiocin and amoxicillin in experimental sepsis caused by beta-lactam-susceptible and highly resistant pneumococci. *Int J Antimicrob Agents*. 2010 Jun;35(6):544-9. doi: 10.1016/j.ijantimicag.2010.02.007. Epub 2010 Mar 19. PMID: 20303716.

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## 7. Bioactivity

### Biological target:

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Novobiocin (Albamycin) sodium is a potent and orally active antibiotic. Novobiocin sodium also is a DNA gyrase inhibitor and a heat shock protein 90 (Hsp90) antagonist.

### In vitro activity

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Novobiocin specifically inhibited the maturation of the heme-regulated eIF2alpha kinase (HRI) in a concentration-dependent manner. Novobiocin induced the dissociation of Hsp90 and Cdc37 from immature HRI, while the Hsp90 cochaperones p23, FKBP52, and protein phosphatase 5 remained associated with immature HRI.

Reference: Biochemistry. 2004 Jun 29;43(25):8217-29. <https://pubmed.ncbi.nlm.nih.gov/15209518/>

### In vivo activity

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The most effective regimens in animals infected with the amoxicillin-susceptible strain were 200 mg/kg novobiocin and 25 mg/kg amoxicillin, achieving 100% survival and undetectable organisms in the peritoneum. Among mice infected with amoxicillin-resistant *S. pneumoniae*, 200 mg/kg novobiocin gave the highest protection (90-100% survivors), followed by 200mg/kg amoxicillin (60-100%), 100 mg/kg novobiocin (50-87.5%) and 50 mg/kg amoxicillin (14.3-25%).

Reference: Int J Antimicrob Agents. 2010 Jun;35(6):544-9. <https://pubmed.ncbi.nlm.nih.gov/20303716/>

*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.*