# **Product data sheet**



| MedKoo Cat#: 574479   |  |  |  |  |
|---|--|--|--|--|
| Name: Mupirocin calcium dihydrate                                   |  |  |  |  |
| CAS: 115074-43-6 (calcium)  |  |  |  |  |
| Chemical Formula: C <sub>52</sub> H <sub>90</sub> CaO <sub>20</sub> |  |  |  |  |
| Exact Mass: 1074.5651   |  |  |  |  |
| Molecular Weight: 1075.35   |  |  |  |  |
| Product supplied as:  | Powder                                     |  |  |  |
| Purity (by HPLC):   | $\geq 98\%$                                |  |  |  |
| 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:

Mupirocin calcium dihydrate is an antibiotic and bacterial metabolite. It is bacteriostatic against S. aureus (MIC =  $0.05 \mu g/ml$ ) and active against skin wound clinical isolates of methicillin-resistant S. aureus (MRSA; MICs =  $1-4 \mu g/ml$ ). Mupirocin inhibits MRSA and P. aeruginosa biofilm formation in vitro.4 It inhibits bacterial cell wall isoleucyl-tRNA synthetase, slowing bacterial growth. Topical administration of Mupirocin (2% v/v) reduces the number of wound colony forming units (CFUs) in a mouse model of MRSA skin infection. Lithium mupirocin as been used to study mupirocin resistance in staphylococcus aureus and in mycoplasma susceptibility studies.

## 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    | 100.0           | 92.99        |
| Ethanol | 100.0           | 92.99        |
| Water   | 6.0             | 5.58         |

## 4. Stock solution preparation table:

| Concentration / Solvent Volume / Mass | 1 mg    | 5 mg    | 10 mg    |
|---------------------------------------|---------|---------|----------|
| 1 mM                                  | 1.86 mL | 9.28 mL | 18.56 mL |
| 5 mM                                  | 0.37 mL | 1.86 mL | 3.71 mL  |
| 10 mM                                 | 0.19 mL | 0.93 mL | 1.86 mL  |
| 50 mM                                 | 0.04 mL | 0.19 mL | 0.37 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. Mohammad H, Cushman M, Seleem MN. Antibacterial Evaluation of Synthetic Thiazole Compounds In Vitro and In Vivo in a Methicillin-Resistant Staphylococcus aureus (MRSA) Skin Infection Mouse Model. PLoS One. 2015 Nov 4;10(11):e0142321. doi: 10.1371/journal.pone.0142321. PMID: 26536129; PMCID: PMC4633232.

2. Sutherland R, Boon RJ, Griffin KE, Masters PJ, Slocombe B, White AR. Antibacterial activity of mupirocin (pseudomonic acid), a new antibiotic for topical use. Antimicrob Agents Chemother. 1985 Apr;27(4):495-8. doi: 10.1128/AAC.27.4.495. PMID: 3923922; PMCID: PMC180082.

## In vivo study

1. Vingsbo Lundberg C, Frimodt-Møller N. Efficacy of topical and systemic antibiotic treatment of meticillin-resistant Staphylococcus aureus in a murine superficial skin wound infection model. Int J Antimicrob Agents. 2013 Sep;42(3):272-5. doi: 10.1016/j.ijantimicag.2013.05.008. Epub 2013 Jul 6. PMID: 23837927.

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2. Giacometti A, Cirioni O, Ghiselli R, Goffi L, Viticchi C, Mocchegiani F, Riva A, Orlando F, Saba V, Scalise G. Mupirocin prophylaxis against methicillin-susceptible, methicillin-resistant, or vancomycin-intermediate Staphylococcus epidermidis vascular-graft infection. Antimicrob Agents Chemother. 2000 Oct;44(10):2842-4. doi: 10.1128/AAC.44.10.2842-2844.2000. PMID: 10991868; PMCID: PMC90159.

## 7. Bioactivity

Biological target:

Mupirocin (BRL-4910A, Pseudomonic acid) calcium hydrate is an orally active antibiotic isolated from Pseudomonas fluorescens.

#### In vitro activity

Mupirocin (pseudomonic acid A), an antibiotic produced by Pseudomonas fluorescens, showed a high level of activity against staphylococci and streptococci and against certain gram-negative bacteria, including Haemophilus influenzae and Neisseria gonorrhoeae, but was much less active against most gram-negative bacilli an anaerobes. Mupirocin was highly bound (95% bound) to the protein of human serum, and activity was reduced 10- to 20-fold in the presence of human serum.

Reference: Antimicrob Agents Chemother. 1985 Apr;27(4):495-8. https://pubmed.ncbi.nlm.nih.gov/3923922/

#### In vivo activity

Graft infections were established in the back subcutaneous tissue of adult male Wistar rats by implantation of Dacron prostheses (1 cm(2)) followed by topical inoculation with 5 x 10(7) CFU of one staphylococcal strain. The study included a control group (no graft contamination), three contaminated groups that did not receive any antibiotic prophylaxis, three contaminated groups that received mupirocin-soaked grafts, three contaminated groups in which perioperative intraperitoneal vancomycin prophylaxis (10 mg/kg of body weight) was administered, and three contaminated groups that received mupirocin-soaked grafts and perioperative intraperitoneal vancomycin prophylaxis (10 mg/kg). Data analysis showed the efficacy of mupirocin against all three strains, with growth of the strains in treated rats significantly different than that in the untreated control. In addition, mupirocin was more effective than vancomycin against the strain with intermediate susceptibility to the glycopeptide.

Reference: Antimicrob Agents Chemother. 2000 Oct;44(10):2842-4. https://pubmed.ncbi.nlm.nih.gov/10991868/

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.