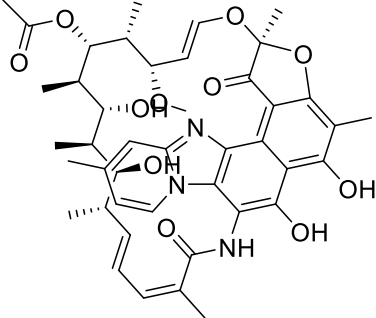


# Product data sheet



MedKoo Cat#: 326762 Name: Rifaximin CAS#: 80621-81-4 Chemical Formula: C <sub>43</sub> H <sub>51</sub> N <sub>3</sub> O <sub>11</sub> Exact Mass: 785.3524 Molecular Weight: 785.89	
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:

Rifaximin is a semisynthetic antibiotic based on rifamycin. It has poor oral bioavailability, meaning that very little of the drug will be absorbed into the blood stream when it is taken orally. Rifaximin is used in the treatment of traveler's diarrhea, irritable bowel syndrome, and hepatic encephalopathy, for which it received orphan drug status from the U.S. Food and Drug Administration in 1998. Rifaximin interferes with transcription by binding to the  $\beta$ -subunit of bacterial RNA polymerase. This results in the blockage of the translocation step that normally follows the formation of the first phosphodiester bond, which occurs in the transcription process.

## 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
DMF	30	38.17
DMSO	10	12.72
Ethanol	30	38.17

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.27 mL	6.36 mL	12.72 mL
5 mM	0.25 mL	1.27 mL	2.54 mL
10 mM	0.13 mL	0.64 mL	1.27 mL
50 mM	0.03 mL	0.13 mL	0.25 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

- Mencarelli A, Renga B, Palladino G, Claudio D, Ricci P, Distrutti E, Barbanti M, Baldelli F, Fiorucci S. Inhibition of NF- $\kappa$ B by a PXR-dependent pathway mediates counter-regulatory activities of rifaximin on innate immunity in intestinal epithelial cells. *Eur J Pharmacol.* 2011 Oct 1;668(1-2):317-24. doi: 10.1016/j.ejphar.2011.06.058. Epub 2011 Jul 26. PMID: 21806984.
- Brown EL, Xue Q, Jiang ZD, Xu Y, Dupont HL. Pretreatment of epithelial cells with rifaximin alters bacterial attachment and internalization profiles. *Antimicrob Agents Chemother.* 2010 Jan;54(1):388-96. doi: 10.1128/AAC.00691-09. Epub 2009 Oct 26. PMID: 19858255; PMCID: PMC2798526.

### In vivo study

- Goh BC, Larsson S, Dam LC, Ling YHS, Chua WLP, Abirami R, Singh S, Ong JLE, Teo JWP, Ho P, Ingham PW, Pethe K, Dedon PC. Rifaximin potentiates clarithromycin against Mycobacterium abscessus in vitro and in zebrafish. *JAC Antimicrob Resist.* 2023 May 8;5(3):dlad052. doi: 10.1093/jacamr/dlad052. PMID: 37168836; PMCID: PMC10164658.

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- Hong CT, Chan L, Chen KY, Lee HH, Huang LK, Yang YSH, Liu YR, Hu CJ. Rifaximin Modifies Gut Microbiota and Attenuates Inflammation in Parkinson's Disease: Preclinical and Clinical Studies. *Cells*. 2022 Nov 2;11(21):3468. doi: 10.3390/cells11213468. PMID: 36359864; PMCID: PMC9656351.

## 7. Bioactivity

### Biological target:

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Rifaximin growth of several Gram-positive and Gram-negative bacteria in vitro, including *Staphylococcus*, *Streptococcus*, *Enterococcus*, *H. influenzae*, and *N. gonorrhoeae* (MIC50s =  $\leq 0.015$ ,  $< 0.12$ ,  $0.25$ - $2$ ,  $0.25$ , and  $0.25$   $\mu\text{g/mL}$ , respectively). It is a pregnane X receptor (PXR) agonist (EC50 =  $\sim 20$   $\mu\text{M}$ ). Rifaximin exhibits minimal intestinal absorption after oral administration. Rifaximin is effective in eliminating bacteria in the gastrointestinal system.

### In vitro activity

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Rifaximin exerts counter-regulatory activities at the interface between enteric bacteria and intestinal epithelial cells. The ability of rifaximin to activate PXR contributes to the maintenance of the intestinal immune homeostasis.

Reference: *Eur J Pharmacol*. 2011 Oct 1;668(1-2):317-24. <https://pubmed.ncbi.nlm.nih.gov/21806984/>

### In vivo activity

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Rifaximin exerted a neuroprotective effect on the transgenic Parkinson's disease mice by modulating gut microbiota. Patients with higher baseline inflammation possibly benefited from rifaximin treatment.

Reference: *Preclinical and Clinical Studies*. *Cells*. 2022 Nov 2;11(21):3468. <https://pubmed.ncbi.nlm.nih.gov/36359864/>

*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.*