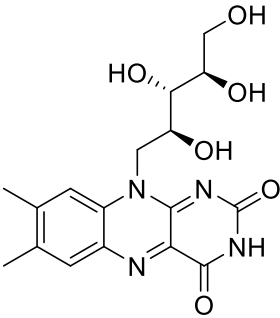


Product data sheet



MedKoo Cat#: 318661 Name: Riboflavin CAS#: 83-88-5 Chemical Formula: C ₁₇ H ₂₀ N ₄ O ₆ Exact Mass: 376.1383 Molecular Weight: 376.37	
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:

Riboflavin, also known as vitamin B2, is an essential human nutrient that is a heat-stable and water-soluble flavin belonging to the vitamin B family.

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	17.86	47.45
Water	14.29	37.97

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.66 mL	13.28 mL	26.57 mL
5 mM	0.53 mL	2.66 mL	5.31 mL
10 mM	0.27 mL	1.33 mL	2.66 mL
50 mM	0.05 mL	0.27 mL	0.53 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

- Zhang B, Cao JT, Wu YB, Gao KX, Xie M, Zhou ZK, Tang J, Hou SS. Riboflavin (Vitamin B2) Deficiency Induces Apoptosis Mediated by Endoplasmic Reticulum Stress and the CHOP Pathway in HepG2 Cells. *Nutrients*. 2022 Aug 16;14(16):3356. doi: 10.3390/nu14163356. PMID: 36014863; PMCID: PMC9414855.
- Long L, Pang XX, Zeng FM, Zhan XH, Xie YH, Pan F, Wang W, Liao LD, Xu XE, Li B, Wang LD, Chang ZJ, Li EM, Xu LY. Promotion of rs3746804 (p. L267P) polymorphism to intracellular SLC52A3a trafficking and riboflavin transportation in esophageal cancer cells. *Amino Acids*. 2021 Aug;53(8):1197-1209. doi: 10.1007/s00726-021-03025-4. Epub 2021 Jul 5. PMID: 34223992.

In vivo study

- Olfati A, Tvrdá E. Riboflavin recovery of spermatogenic dysfunction via a dual inhibition of oxidative changes and regulation of the PINK1-mediated pathway in arsenic-injured rat model. *Physiol Res*. 2021 Aug 31;70(4):591-603. doi: 10.33549/physiolres.934658. Epub 2021 Jun 1. PMID: 34062077; PMCID: PMC8820542.
- Alhazza IM, Hassan I, Ebaid H, Al-Tamimi J, Alwasel SH. Chemopreventive effect of riboflavin on the potassium bromate-induced renal toxicity in vivo. *Naunyn-Schmiedeberg's Arch Pharmacol*. 2020 Dec;393(12):2355-2364. doi: 10.1007/s00210-020-01938-7. Epub 2020 Jul 14. PMID: 32666286.

Product data sheet



7. Bioactivity

Biological target:

Riboflavin is a precursor of the coenzymes flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD). These coenzymes are of vital importance in normal tissue respiration, pyridoxine activation, tryptophan to niacin conversion, fat, carbohydrate, and protein metabolism, and glutathione reductase mediated detoxification. Riboflavin may also be involved in maintaining erythrocyte integrity. This vitamin is essential for healthy skin, nails, and hair.

In vitro activity

In the HepG2 cell line, riboflavin deficiency induces cell apoptosis by triggering ER stress and the CHOP pathway. Riboflavin deficiency inhibited cell proliferation and caused ER stress, increased the expression of ER stress markers, increased the cell apoptosis rate, enhanced the expression of proapoptotic markers, and decreased the expression of the antiapoptotic marker.

Reference: Nutrients. 2022 Aug 16;14(16):3356. <https://pubmed.ncbi.nlm.nih.gov/36014863/>

In vivo activity

In an arsenic-injured rat model, it was revealed that riboflavin supplementation protected testicular structures against As₂O₃-induced injury via a dual inhibition of oxidative changes and a regulation of the PINK1-mediated pathway. Exposure to riboflavin led to a significant decrease of the expression levels of mitophagy related genes.

Reference: Physiol Res. 2021 Aug 31;70(4):591-603. <https://pubmed.ncbi.nlm.nih.gov/34062077/>

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.