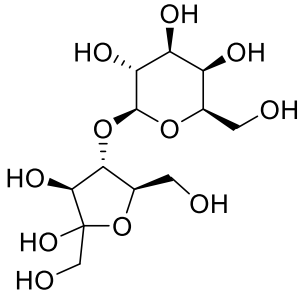


# Product data sheet



MedKoo Cat#: 328708 Name: Lactulose CAS: 4618-18-2 Chemical Formula: C <sub>12</sub> H <sub>22</sub> O <sub>11</sub> Exact Mass: 342.1162 Molecular Weight: 342.297	
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:

Lactulose is a synthetic disaccharide used in the treatment of constipation and hepatic encephalopathy. Lactulose has also been used in the diagnosis of gastrointestinal disorders.

## 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	46.5	135.85
Water	84.0	245.40

## 4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.92 mL	14.61 mL	29.21 mL
5 mM	0.58 mL	2.92 mL	5.84 mL
10 mM	0.29 mL	1.46 mL	2.92 mL
50 mM	0.06 mL	0.29 mL	0.58 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. Calatayud M, Duysburgh C, Van den Abbeele P, Franckenstein D, Kuchina-Koch A, Marzorati M. Long-Term Lactulose Administration Improves Dysbiosis Induced by Antibiotic and *C. difficile* in the PathoGut™ SHIME Model. *Antibiotics* (Basel). 2022 Oct 24;11(11):1464. doi: 10.3390/antibiotics11111464. PMID: 36358119; PMCID: PMC9686563.

### In vivo study

1. Hiraishi K, Zhao F, Kurahara LH, Li X, Yamashita T, Hashimoto T, Matsuda Y, Sun Z, Zhang H, Hirano K. Lactulose Modulates the Structure of Gut Microbiota and Alleviates Colitis-Associated Tumorigenesis. *Nutrients*. 2022 Feb 3;14(3):649. doi: 10.3390/nu14030649. PMID: 35277009; PMCID: PMC8840163.

2. Yuan Q, Xin L, Han S, Su Y, Wu R, Liu X, Wuri J, Li R, Yan T. Lactulose Improves Neurological Outcomes by Repressing Harmful Bacteria and Regulating Inflammatory Reactions in Mice After Stroke. *Front Cell Infect Microbiol*. 2021 Jul 13;11:644448. doi: 10.3389/fcimb.2021.644448. PMID: 34327147; PMCID: PMC8313872.

## 7. Bioactivity

### Biological target:

Lactulose is a non-absorbable sugar used in the treatment of constipation and hepatic encephalopathy.

# Product data sheet



## In vitro activity

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The results showed that lactulose reduced the growth of viable *C. difficile* cells following clindamycin treatment, shifted the antibiotic-induced dysbiotic microbial community, and stimulated the production of health-promoting metabolites (especially butyrate). Recovery of the gut microenvironment by long-term lactulose administration following CDI was also linked to lactate production, decrease in pH and modulation of bile salt metabolism.

Reference: Antibiotics (Basel). 2022 Oct 24;11(11):1464. <https://pubmed.ncbi.nlm.nih.gov/36358119/>

## In vivo activity

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The present study investigated the therapeutic effect of lactulose on gastrointestinal inflammation and inflammation-related tumorigenesis in a mouse model of colorectal cancer as well as its effect on gut microbiota composition. Lactulose significantly inhibited the inflammatory events, and ameliorated inflammation and tumorigenesis.

Reference: Nutrients. 2022 Feb 3;14(3):649. <https://pubmed.ncbi.nlm.nih.gov/35277009/>

*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.*