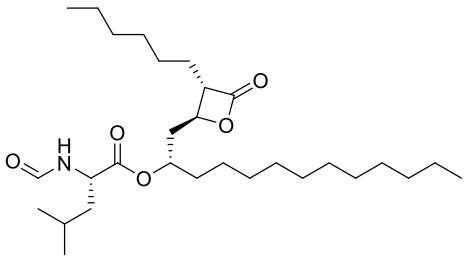
Product data sheet

MedKoo Cat#: 318390 Name: Orlistat CAS#: 96829-58-2 Chemical Formula: $C_{29}H_{53}NO_5$ Exact Mass: 495.3924 Molecular Weight: 495.73	
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:

Orlistat is a drug designed to treat obesity. Its primary function is preventing the absorption of fats from the human diet by acting as a lipase inhibitor, thereby reducing caloric intake. It is intended for use in conjunction with a healthcare provider-supervised reduced-calorie diet.

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	10.0	20.2

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.02 mL	10.09 mL	20.17 mL
5 mM	0.40 mL	2.02 mL	4.03 mL
10 mM	0.20 mL	1.01 mL	2.02 mL
50 mM	0.04 mL	0.20 mL	0.40 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. Hitakarun A, Khongwichit S, Wikan N, Roytrakul S, Yoksan S, Rajakam S, Davidson AD, Smith DR. Evaluation of the antiviral activity of orlistat (tetrahydrolipstatin) against dengue virus, Japanese encephalitis virus, Zika virus and chikungunya virus. Sci Rep. 2020 Jan 30;10(1):1499. doi: 10.1038/s41598-020-58468-8. PMID: 32001767; PMCID: PMC6992670.
2. Sankaranarayanapillai M, Zhang N, Baggerly KA, Gelovani JG. Metabolic shifts induced by fatty acid synthase inhibitor orlistat in non-small cell lung carcinoma cells provide novel pharmacodynamic biomarkers for positron emission tomography and magnetic resonance spectroscopy. Mol Imaging Biol. 2013 Apr;15(2):136-47. doi: 10.1007/s11307-012-0587-6. PMID: 22886728; PMCID: PMC3591534.

In vivo study

1. Othman ZA, Zakaria Z, Suleiman JB, Ghazali WSW, Mohamed M. Anti-Atherogenic Effects of Orlistat on Obesity-Induced Vascular Oxidative Stress Rat Model. Antioxidants (Basel). 2021 Feb 6;10(2):251. doi: 10.3390/antiox10020251. PMID: 33562069; PMCID: PMC7915029.
2. Ke J, An Y, Cao B, Lang J, Wu N, Zhao D. Orlistat-Induced Gut Microbiota Modification in Obese Mice. Evid Based Complement Alternat Med. 2020 Apr 8;2020:9818349. doi: 10.1155/2020/9818349. PMID: 32328145; PMCID: PMC7168719.

7. Bioactivity

Product data sheet

Biological target:

Orlistat is a lipase inhibitor for obesity management that acts by inhibiting the absorption of dietary fats.

In vitro activity

When labeled with [1-^{13}C]d-glucose and [1,2-$^{13}C_2$]choline, common metabolic differences between control and orlistat-treated H441, H1975, and PC14 cells were observed, such as increased accumulation of β-glucose (Glu-β) and β-fructose 1,6-bisphosphate (βF16P) (Fig. 3c; Fig. S2 in the "Electronic Supplementary Material") and decreased levels of *de novo* FA and *de novo* and total phosphatidylcholine (Ptd.Cho.) However, H3255 cells did not exhibit any of the metabolic changes observed in H441, H1975, and PC14 cell lines. In orlistat-treated H3255 cells, a significant increase in the level of membrane phospholipids (CL/Ptd.EA, Ptd.serine, and sphingomyelin) was observed by ^{31}P MRS, but no significant changes in *de novo* FA were observed by ^{13}C MRS (Fig. S2 in the "Electronic Supplementary Material"). In contrast, orlistat-treated H441, H1975, and PC14 cells exhibited a significant decrease in membrane phospholipid levels, including Ptd.inositol (Fig. 3d; Fig. S2 in the "Electronic Supplementary Material").

Reference: Evid Based Complement Alternat Med. 2020 Apr 8;2020:9818349.
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3591534/

In vivo activity

The assessment of serum lipid and metabolic profiles were carried out for all groups. There were significant increases for the levels of TC, TG, LDL, CRI I and II, and leptin but significant decrease for the levels of HDL and adiponectin in the OB (obese rats administered with distilled water) group as compared to the Normal group. Daily oral administration of orlistat in the obese rats in concomitant to HFD (high fat diet) for six weeks significantly decreased the levels of TC, TG, LDL, CRI-I, CRI-II, and leptin but significantly increased the levels of HDL and adiponectin compared to the OB group (Table 2).

Reference: Antioxidants (Basel). 2021 Feb; 10(2): 251. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7915029/

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.