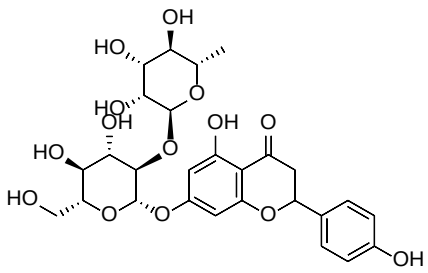
Product data sheet

MedKoo Cat#: 540311 Name: Naringin CAS: 10236-47-2 Chemical Formula: $C_{27}H_{32}O_{14}$ Exact Mass: 580.1792 Molecular Weight: 580.539	
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:
Naringin is a SERM(selective estrogen receptor modulator) found in citrus fruits. It exhibits a wide variety of biological activities, including inhibiting the release of VEGF in ER+ breast cancer cells, improving colchicine-induced deficits in cognitive performance, attenuating oxidative damage, and suppressing gentamicin-induced pro-inflammatory cytokine expresion.

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	20.0	34.45
DMF:PBS (pH 7.2) (1:1)	0.5	0.86
DMSO	78.33	134.93
Ethanol	23.5	40.48
Water	1.0	1.72

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	1.72 mL	8.61 mL	17.23 mL
5 mM	0.34 mL	1.72 mL	3.45 mL
10 mM	0.17 mL	0.86 mL	1.72 mL
50 mM	0.03 mL	0.17 mL	0.34 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. Kulasekaran G, Ganapasam S. Neuroprotective efficacy of naringin on 3-nitropropionic acid-induced mitochondrial dysfunction through the modulation of Nrf2 signaling pathway in PC12 cells. Mol Cell Biochem. 2015 Nov;409(1-2):199-211. doi: 10.1007/s11010-015-2525-9. Epub 2015 Aug 18. PMID: 26280522.
2. Raha S, Yumnam S, Hong GE, Lee HJ, Saralamma VV, Park HS, Heo JD, Lee SJ, Kim EH, Kim JA, Kim GS. Naringin induces autophagy-mediated growth inhibition by downregulating the PI3K/Akt/mTOR cascade via activation of MAPK pathways in AGS cancer cells. Int J Oncol. 2015 Sep;47(3):1061-9. doi: 10.3892/ijo.2015.3095. Epub 2015 Jul 20. PMID: 26201693.

In vivo study

1. Wei Y, Sun L, Liu C, Li L. Naringin regulates endoplasmic reticulum stress and mitophagy through the ATF3/PINK1 signaling axis to alleviate pulmonary fibrosis. Naunyn Schmiedebergs Arch Pharmacol. 2023 Jan 23. doi: 10.1007/s00210-023-02390-z. Epub ahead of print. PMID: 36688958.

Product data sheet

2. Wang D, Yan J, Chen J, Wu W, Zhu X, Wang Y. Naringin Improves Neuronal Insulin Signaling, Brain Mitochondrial Function, and Cognitive Function in High-Fat Diet-Induced Obese Mice. Cell Mol Neurobiol. 2015 Oct;35(7):1061-71. doi: 10.1007/s10571-015-0201-y. Epub 2015 May 5. PMID: 25939427.

7. Bioactivity

Biological target:

Naringin is a major flavanone glycoside obtained from tomatoes, grapefruits, and many other citrus fruits.

In vitro activity

This study investigated the inhibitory effect of Naringin on human AGS cancer cells. AGS cell proliferation was inhibited by Naringin in a dose- and time-dependent manner. Growth inhibitory role of Naringin was observed by western blot analysis demonstrating downregulation of PI3K/Akt/mTOR cascade with an upregulated p21CIPI/WAFI. Formation of cytoplasmic vacuoles and autophagosomes were observed in Naringin-treated AGS cells, further confirmed by the activation of autophagic proteins Beclin 1 and LC3B with a significant phosphorylation of mitogen activated protein kinases (MAPKs). Collectively, these observed results determined that anti-proliferative activity of Naringin in AGS cancer cells is due to suppression of PI3K/Akt/mTOR cascade via induction of autophagy with activated MAPKs.

Reference: Int J Oncol. 2015 Sep;47(3):1061-9. https://pubmed.ncbi.nlm.nih.gov/26201693/

In vivo activity

These results showed that oral administration of naringin significantly improved the learning and memory abilities as evidenced by increasing recognition index by 52.5% in the novel object recognition test and inducing a 1.05-fold increase in the crossing-target number in the probe test, and ameliorated mitochondrial dysfunction in mice caused by HFD consumption. Moreover, naringin significantly enhanced insulin signaling pathway as indicated by a 34.5% increase in the expression levels of IRS-1, a 47.8% decrease in the p-IRS-1, a 1.43-fold increase in the p-Akt, and a 1.89-fold increase in the p-GSK-3β in the hippocampus of the HFDN mice versus HFD mice.

Reference: Cell Mol Neurobiol. 2015 Oct;35(7):1061-71. https://pubmed.ncbi.nlm.nih.gov/25939427/