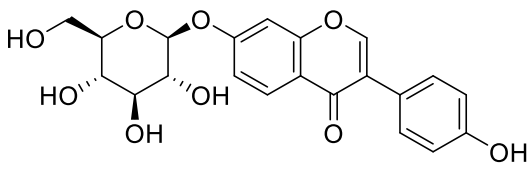
Product data sheet

MedKoo Cat#: 561538 Name: Daidzin CAS#: 552-66-9 Chemical Formula: $C_{21}H_{20}O_9$ Exact Mass: 416.1107 Molecular Weight: 416.382	
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:
Daidzin is an aldehyde dehydrogenase 2 inhibitor. It decreases DNA damage but does not alter transmitter release by cisplatin. Daidzin is also an antidipsotropic agent, and shows potential for the treatment of alcohol dependency.

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	48.0	115.28

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.40 mL	12.01 mL	24.02 mL
5 mM	0.48 mL	2.40 mL	4.80 mL
10 mM	0.24 mL	1.20 mL	2.40 mL
50 mM	0.05 mL	0.24 mL	0.48 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. Yang MH, Jung SH, Chinnathambi A, Alahmadi TA, Alharbi SA, Sethi G, Ahn KS. Attenuation of STAT3 Signaling Cascade by Daidzin Can Enhance the Apoptotic Potential of Bortezomib against Multiple Myeloma. Biomolecules. 2019 Dec 23;10(1):23. doi: 10.3390/biom10010023. PMID: 31878046; PMCID: PMC7022648.
2. Keung WM, Lazo O, Kunze L, Vallee BL. Daidzin suppresses ethanol consumption by Syrian golden hamsters without blocking acetaldehyde metabolism. Proc Natl Acad Sci U S A. 1995 Sep 12;92(19):8990-3. doi: 10.1073/pnas.92.19.8990. PMID: 7568058; PMCID: PMC41093.

In vivo study

1. Wu KC, Lin WY, Sung YT, Wu WY, Cheng YH, Chen TS, Chiang BJ, Chien CT. Glycine tomentella hayata extract and its ingredient daidzin ameliorate cyclophosphamide-induced hemorrhagic cystitis and oxidative stress through the action of antioxidation, anti-fibrosis, and anti-inflammation. Chin J Physiol. 2019 Sep-Oct;62(5):188-195. doi: 10.4103/CJP.CJP_60_19. PMID: 31670282.
2. Keung WM, Lazo O, Kunze L, Vallee BL. Daidzin suppresses ethanol consumption by Syrian golden hamsters without blocking acetaldehyde metabolism. Proc Natl Acad Sci U S A. 1995 Sep 12;92(19):8990-3. doi: 10.1073/pnas.92.19.8990. PMID: 7568058; PMCID: PMC41093.

Product data sheet

7. Bioactivity

Biological target:

Daidzin is an isoflavone that has anti-oxidant, anti-carcinogenic, and anti-atherosclerotic activities; it directly inhibits mitochondrial aldehyde dehydrogenase 2 (IC50 = 80 nM) and is an effective anti-dipsotropic isoflavone.

In vitro activity

It was next determined if DDZ could alter STAT3 activation in U266 cells. As depicted in Figure 1C, DDZ substantially suppressed the constitutive activation of both p-STAT3 (Tyr705) and p-STAT3(Ser727) in U266 cells. It was next examined whether DDZ could affect the ability of STAT3 to bind to DNA, and it was noted that DDZ could effectively modify the DNA-binding activity of STAT3 (Figure 1D). Additionally, the effect of DDZ to regulate the nuclear localization of STAT3 in U266 cells was examined by immunocytochemistry. Figure 1E,F demonstrate that DDZ could reduce the translocation of phospho-STAT3 and total STAT3 to the nucleus.

Reference: Biomolecules. 2020 Jan; 10(1): 23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7022648/

In vivo activity

To determine whether or not daidzin inhibits acetaldehyde metabolism in vivo, plasma acetaldehyde in daidzin-treated hamsters was measured after the administration of a test dose of ethanol. Daidzin treatment (150 mg/kg per day i.p. for 6 days) significantly suppresses (> 70%) hamster ethanol intake. Before ethanol challenge, the residual acetaldehyde concentrations found in the plasma of these hamsters were 1.2, 2.5,and 3 ,AM, respectively (Fig. 2A, t = 0)-i.e., in the range of background values normally found in untreated hamsters kept in our animal facility. After injection of a test ethanol dose (1.3 g/kg i.p.), there is a 4-fold increase in plasma acetaldehyde concentration in all hamsters. These results indicate that (i) the action of daidzin differs from that proposed for the classic, broad-acting ALDH inhibitors (e.g., disulfiram), and (ii) the daidzin-sensitive mitochondrial ALDH is not the one and only enzyme that is essential for acetaldehyde metabolism in golden hamsters.

Reference: Proc Natl Acad Sci U S A. 1995 Sep 12;92(19):8990-3. https://pubmed.ncbi.nlm.nih.gov/7568058/