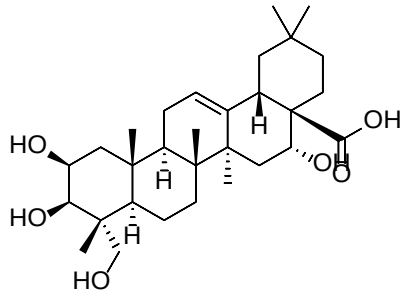
Product data sheet

MedKoo Cat#: 464498 Name: Polygalacic Acid CAS: 22338-71-2 Chemical Formula: $C_{30}H_{48}O_6$ Exact Mass: 504.3451 Molecular Weight: 504.708	
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:
Polygalacic acid is a triterpenoid saponin that has been found in P. grandiflorum with antioxidant and neuroprotective activities. It scavenges peroxyl and peroxynitrite radicals in total oxidant-scavenging capacity (TOSC) assays when used at concentrations ranging from 25 to 200 μM. Polygalacic acid (3, 6, and 12 mg/kg) reverses scopolamine-induced increases in escape latency and decreases in the time spent in the target quadrant of the Morris water maze, decreases in hippocampal acetylcholine (ACh) levels, increases in hippocampal IL-1β and IL-10 levels, and decreases in brain superoxide dismutase (SOD) and glutathione (GSH) levels in mice.

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	75.0	148.60
Ethanol	55.0	108.97

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	1.98 mL	9.91 mL	19.81 mL
5 mM	0.40 mL	1.98 mL	3.96 mL
10 mM	0.20 mL	0.99 mL	1.98 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. Xu K, Ma C, Xu L, Ran J, Jiang L, He Y, Adel Abdo Moqbel S, Wang Z, Wu L. Polygalacic acid inhibits MMPs expression and osteoarthritis via Wnt/β-catenin and MAPK signal pathways suppression. Int Immunopharmacol. 2018 Oct;63:246-252. doi: 10.1016/j.intimp.2018.08.013. Epub 2018 Aug 14. PMID: 30119032.
2. Guo C, Shen J, Meng Z, Yang X, Li F. Neuroprotective effects of polygalacic acid on scopolamine-induced memory deficits in mice. Phytomedicine. 2016 Feb 15;23(2):149-55. doi: 10.1016/j.phymed.2015.12.009. Epub 2016 Jan 4. PMID: 26926176.

In vivo study

1. Xu K, Ma C, Xu L, Ran J, Jiang L, He Y, Adel Abdo Moqbel S, Wang Z, Wu L. Polygalacic acid inhibits MMPs expression and osteoarthritis via Wnt/β-catenin and MAPK signal pathways suppression. Int Immunopharmacol. 2018 Oct;63:246-252. doi: 10.1016/j.intimp.2018.08.013. Epub 2018 Aug 14. PMID: 30119032.
2. Guo C, Shen J, Meng Z, Yang X, Li F. Neuroprotective effects of polygalacic acid on scopolamine-induced memory deficits in mice. Phytomedicine. 2016 Feb 15;23(2):149-55. doi: 10.1016/j.phymed.2015.12.009. Epub 2016 Jan 4. PMID: 26926176.

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7. Bioactivity

Biological target:

Polygalacic acid inhibits MMP expression.

In vitro activity

In vitro, rat chondrocytes were induced with interleukin-1beta (IL-1β) and treated with different concentrations of polygalacic acid; real-time PCR and Western blotting were performed to evaluate the expressions of MMP-3, MMP-9, MMP-13, and COX-2. To investigate the underlying mechanism, this study found that polygalacic acid suppressed both the IL-1β-induced activation of Wnt/β-catenin and the mitogen-activated protein kinase (MAPK) signal pathway in chondrocytes. These results suggest that polygalacic acid may have a therapeutic effect in OA treatment.

Reference: Int Immunopharmacol. 2018 Oct;63:246-252. https://pubmed.ncbi.nlm.nih.gov/30119032/

In vivo activity

PA (polygalacic acid) (3, 6, and 12 mg/kg) was administered orally to mice for fourteen days, and scopolamine (1 mg/kg) was injected intraperitoneally for fourteen days to induce memory impairment. Treatment with scopolamine significantly increased the escape latency time, decreased the number of crossings, and shortened the time spent in the target quadrant, while PA reversed these scopolamine-induced effects. PA significantly improved cholinergic system reactivity, as indicated by decreased acetylcholinesterase (AChE) activity, increased choline acetyltransferase (ChAT) activity, and elevated levels of acetylcholine (ACh) in the hippocampus and frontal cortex. PA significantly ameliorated neuroinflammation and oxidative stress in mice.

Reference: Phytomedicine. 2016 Feb 15;23(2):149-55. https://pubmed.ncbi.nlm.nih.gov/26926176/