# Product data sheet

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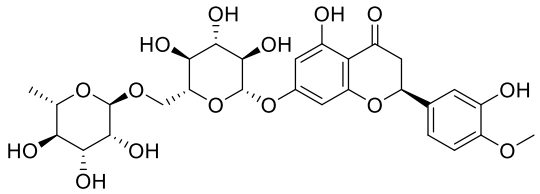
|---|---|
| MedKoo Cat#: 600141<br>Name: Hesperidin<br>CAS: 520-26-3<br>Chemical Formula: $C_{28}H_{34}O_{15}$<br>Exact Mass: 610.1898<br>Molecular Weight: 610.565 |  |
| Product supplied as: | Powder |
| Purity (by HPLC): | ≥ 98% |
| Shipping conditions | Ambient temperature |
| Storage conditions: | Powder: -20°C 3 years; 4°C 2 years. |
| | In solvent: -80°C 3 months; -20°C 2 weeks. |

**1. Product description:**
Hesperidin is a flavanone glycoside found abundantly in citrus fruits. Its aglycone form is called hesperetin. Its name is derived from the word "hesperidium", the kind of fruit produced by citrus trees. Hesperidin was first isolated in 1828 by French chemist Lebreton from the white inner layer of citrus peels (mesocarp, albedo). Hesperidin is believed to play a role in plant defense. It acts as an antioxidant according to in vitro studies.

**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 | 3.0 | 4.91 |
| DMSO | 21.67 | 35.49 |
| DMSO:PBS (pH 7.2) (1:5) | 0.5 | 0.82 |

**4. Stock solution preparation table:**

| Concentration / Solvent Volume / Mass | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 1.64 mL | 8.19 mL | 16.38 mL |
| 5 mM | 0.33 mL | 1.64 mL | 3.28 mL |
| 10 mM | 0.16 mL | 0.82 mL | 1.64 mL |
| 50 mM | 0.03 mL | 0.16 mL | 0.33 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. Herath HMUL, Piao MJ, Kang KA, Zhen AX, Fernando PDSM, Kang HK, Yi JM, Hyun JW. Hesperidin Exhibits Protective Effects against PM2.5-Mediated Mitochondrial Damage, Cell Cycle Arrest, and Cellular Senescence in Human HaCaT Keratinocytes. Molecules. 2022 Jul 27;27(15):4800. doi: 10.3390/molecules27154800. PMID: 35956749; PMCID: PMC9369620.
2. Yao Y, Lin M, Liu Z, Liu M, Zhang S, Zhang Y. Hesperidin Inhibits Lung Cancer In Vitro and In Vivo Through PinX1. Front Pharmacol. 2022 Jul 1;13:918665. doi: 10.3389/fphar.2022.918665. PMID: 35847001; PMCID: PMC9283948.

In vivo study

1. Jia Q, Li L, Wang X, Wang Y, Jiang K, Yang K, Cong J, Cai G, Ling J. Hesperidin promotes gastric motility in rats with functional dyspepsia by regulating Drp1-mediated ICC mitophagy. Front Pharmacol. 2022 Aug 12;13:945624. doi: 10.3389/fphar.2022.945624. PMID: 36034863; PMCID: PMC9412972.

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2. Lee D, Kim N, Jeon SH, Gee MS, Ju YJ, Jung MJ, Cho JS, Lee Y, Lee S, Lee JK. Hesperidin Improves Memory Function by Enhancing Neurogenesis in a Mouse Model of Alzheimer's Disease. Nutrients. 2022 Jul 29;14(15):3125. doi: 10.3390/nu14153125. PMID: 35956303; PMCID: PMC9370591.

**7. Bioactivity**

Biological target:

Hesperidin (Hesperetin 7-rutinoside), a flavanone glycoside, is isolated from citrus fruits. Hesperidin has numerous biological properties, such as decreasing inflammatory mediators and exerting significant antioxidant effects.

In vitro activity

Hesperidin notably reversed $PM_{2.5}$-induced mitochondrial depolarization (Figure 1B). Furthermore, hesperidin markedly restored $PM_{2.5}$-reduced myeloid cell leukemia-1 (Mcl-1), and B-cell lymphoma 2 (Bcl-2), and hesperidin markedly inhibited the expression of Bcl-2-like protein 11 (Bim) and Bcl-2-associated X protein (Bax) induced by $PM_{2.5}$ (Figure 1C). In addition, $PM_{2.5}$ increased the release of cytochrome c from the mitochondria to the cytoplasm; however, hesperidin attenuated it (Figure 1D). These results confirm that hesperidin remarkably alleviates $PM_{2.5}$-induced mitochondrial damage.

Reference: Molecules. 2022 Jul 27;27(15):4800. https://pubmed.ncbi.nlm.nih.gov/35956749/

In vivo activity

Compared with the control group, the gastric emptying rate and small intestinal propulsion rate in the model group was significantly decreased ($p < 0.001$). Compared with the model group, the gastric emptying rate and small intestinal propulsion rate in the medium-dose Hes (hesperidin) group, high-dose Hes group and Dompe group were significantly increased ($p < 0.05$, $p < 0.01$, $p < 0.001$), as detailed in Table 1.

Reference: Front Pharmacol. 2022 Aug 12;13:945624. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9412972/

*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.*