# PRODUCT INFORMATION

## Genistein-$d_4$

*Item No. 18244*

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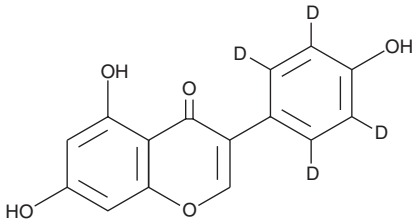
|---|---|
| **CAS Registry No.:** | 187960-08-3 |
| **Formal Name:** | 5,7-dihydroxy-3-(4-hydroxyphenyl-2,3,5,6-$d_4$)-4H-1-benzopyran-4-one |
| **MF:** | $C_{15}H_6D_4O_5$ |
| **FW:** | 274.3 |
| **Chemical Purity:** | ≥95% (Genistein) |
| **Deuterium Incorporation:** | ≥99% deuterated forms ($d_1$-$d_4$); ≤1% $d_0$ |
| **UV/Vis.:** | $\lambda_{max}$: 261 nm |
| **Supplied as:** | A crystalline solid |
| **Storage:** | -20°C |
| **Stability:** | ≥4 years |
| **Item Origin:** | Synthetic |




*Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.*

### Laboratory Procedures

Genistein-$d_4$ is intended for use as an internal standard for the quantification of genistein (Item No. 10005167) by GC- or LC-MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Genistein-$d_4$ is supplied as a crystalline solid. A stock solution may be made by dissolving the genistein-$d_4$ in the solvent of choice, which should be purged with an inert gas. Genistein-$d_4$ is soluble in organic solvents such as DMSO and dimethyl formamide. The solubility of genistein-$d_4$ in these solvents is approximately 30 mg/ml.

### Description

Genistein is an isoflavonoid phytoestrogen that has been found in soybeans (*G. max*/*S. hispida*) and has kinase inhibitory, anticancer, pro-cancer, hepatoprotective, and antiviral properties.[1] It inhibits the tyrosine kinases EGFR, $pp50^{v\text{-}Src}$, and $pp110^{gag\text{-}fes}$ ($IC^{50}$ = 6, 7-8, and 6.5 µg/ml, respectively) and decreases EGF-induced serine, threonine, and tyrosine phosphorylation of EGFR in A431 cells when used at a concentration of 20 µg/ml.[2] Genistein inhibits proliferation and induces apoptosis in a variety of cancer cells, including Bel 7402 hepatocellular carcinoma cells when used at a concentration of 10 µg/ml.[1-3] It reduces tumor invasion and angiogenesis in a Bel 7402 mouse subrenal capsule xenograft model when administered at a dose of 50 mg/kg per day.[3] However, when administered at the same dose on postnatal days 1-5, genistein increases the incidence of uterine adenocarcinoma in a mouse model of cancer induced by the estrogen receptor agonist diethylstilbestrol (DES; Item No. 10006876).[4] It reduces lipid accumulation and inflammation in the liver of ovariectomized (OVX) and non-OVX female rats in a model of high-fat high-fructose diet-induced nonalcoholic hepatosteatosis (NASH) when administered at a dose of 16 mg/kg per day.[5] Genistein (10 µM) also inhibits HIV-1 DNA synthesis in resting $CD4^+$ T cells.[6]

### References


1. Spagnuolo, C., Russo, G.L., Orhan, I.E., *et al. Adv. Nutr.* **6(4)**, 408-419 (2015).
2. Akiyama, T., Ishida, J., Nakagawa, S., *et al. J. Biol. Chem.* **262(1)**, 5592-5595 (1987).
3. Gu, Y., Zhu, C.-F., Iwamoto, H., *et al. World J. Gastroenterol.* **11(41)**, 6512-6517 (2005).
4. Newbold, R.R., Banks, E.P., Bullock, B., *et al. Cancer Res.* **61(11)**, 4325-4328 (2001).
5. Pummoung, S., Werawatganon, D., Klaikeaw, N., *et al. Pharmacogn. Mag.* **14(55)**, 20-24 (2018).
6. Guo, J., Xu, X., Rasheed, T.K., *et al. Retrovirology* **10**, 62 (2013).





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