

ProductInformation

Genistein from *Glycine max* (soybean)

Product Number **G6776**

Storage Temperature -20 °C

Product Description

Molecular Formula: $C_{15}H_{10}O_5$

Molecular Weight: 270.2

CAS Number: 446-72-0

Synonyms: 5,7-Dihydroxy-3-(4-hydroxyphenyl)-4H-1-benzopyran-4-one, 4',5,7-Trihydroxyisoflavone

Genistein is reported to be a specific inhibitor of tyrosine-specific protein kinases, such as, the EGF receptor kinase, pp60 v-src kinase from Rous sarcoma virus, and pp110 kinase from Gardner-Arnstein feline sarcoma virus. Genistein did not inhibit the activity of serine and threonine-specific kinases such as cAMP-dependent protein kinase, protein kinase C, and phosphorylase kinase.¹

Genistein is a potent inhibitor of the mammalian facilitative hexose transporter GLUT1. In human HL-60 cells, which express GLUT1, inhibition of transport of dehydroascorbic acid, deoxyglucose, and methylglucose in a dose-dependent manner was observed. Genistein also inhibits the uptake of deoxyglucose in human erythrocytes. It did not change the uptake of leucine by HL-60 cells, which indicated that the inhibitory effect is specific for glucose transporters. The inhibitory effect of genistein was competitive with a K_i of approximately 12 μ M for the inhibition of the transport of both methylglucose and deoxyglucose.²

Genistein has also been shown to inhibit the contraction of several types of smooth muscle. It may thus be a regulatory mechanism for smooth muscle contraction.³ Genistein partially inhibited the Na^+ -dependent Ca^{2+} uptake in primary rat cortical neuron culture, suggesting that the exchanger may be modulated by tyrosine phosphorylation. Cells were incubated with 100 μ M genistein (in 1% DMSO) for one hour before the assay of Na^+/Ca^{2+} exchange activity.⁴

Several references have been published describing the isolation, purification, and analysis of genistein.^{1,5-8}

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

Genistein is soluble in chloroform:methanol (1:1[v:v], 10 mg/ml), yielding a clear, faint to light yellow solution.

Stock solutions of genistein in DMSO (up to a concentration of 100 mM) have been prepared.⁹

Genistein is practically insoluble in cold water; slightly soluble in hot water, hot ethanol, and hot methanol and soluble in hot 80% ethanol, hot 80% methanol, hot acetone, and pyridine.¹⁰

Storage/Stability

Genistein has been dissolved in DMSO and frozen in aliquots until ready for use.³

References

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4. Wang, C., et al., Genistein inhibits Na^+/Ca^{2+} exchange activity in primary rat cortical neuron culture. *Biochem. Biophys. Res. Commun.*, **233**, 86-90 (1997).
5. Walter, E. D., *J. Am. Chem. Soc.*, **63**, 3273 (1941).
6. Hasegawa, M., *J. Amer. Chem. Soc.*, **79**, 1738 (1957).
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8. Smit, G., et al., *Bradyrhizobium japonicum* nodD1 can be specifically induced by soybean flavonoids that do not induce the nodYABCSUIJ operon. *J. Biol. Chem.*, **267**(1), 310-318 (1992).
9. Huang, J., et al., Genistein inhibits protein histidine kinase. *J. Biol. Chem.*, **267**(22), 15511-15515 (1992).
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