Small Molecules

Genistein

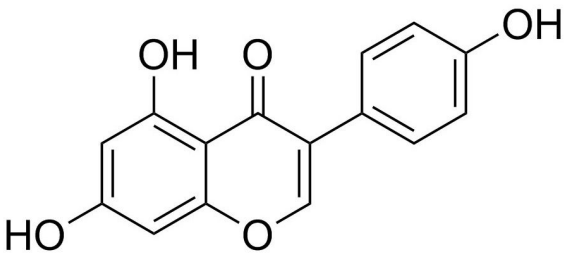
NF-kB, AMPK, and tyrosine kinase pathway inhibitor; Inhibits tyrosine kinase and topoisomerase II and activates PPARγ

Catalog #	72002	100 mg
	72004	250 mg

STEMCELL™ TECHNOLOGIES
Scientists Helping Scientists™ | WWW.STEMCELL.COM
TOLL FREE PHONE 1 800 667 0322 • PHONE +1 604 877 0713
INFO@STEMCELL.COM • TECHSUPPORT@STEMCELL.COM
FOR GLOBAL CONTACT DETAILS VISIT OUR WEBSITE

Product Description

Genistein is a phytoestrogen that exhibits a wide range of biological effects. It acts by competing for the ATP-binding site of tyrosine kinases but does not inhibit the activity of serine- and threonine-specific kinases such as cAMP-dependent protein kinase, protein kinase C, and phosphorylase kinase (Akiyama et al.). Genistein binds to and activates peroxisome proliferator-activated receptor-gamma (PPARγ) and estrogen receptors, leading to a decrease in osteogenesis and an increase in adipogenesis (Dang et al.). Genistein also binds and activates the seven-transmembrane estrogen receptor GPR30 to activate alternative estrogen signaling pathways (Thomas & Dong).

Molecular Name:	Genistein
Alternative Names:	Not applicable
CAS Number:	446-72-0
Chemical Formula:	$C_{15}H_{10}O_5$
Molecular Weight:	270.2 g/mol
Purity:	≥ 98%
Chemical Name:	5,7-dihydroxy-3-(4-hydroxyphenyl)-4-benzopyrone
Structure:	

Properties

Physical Appearance:	A crystalline solid
Storage:	Product stable at -20°C as supplied. Protect from prolonged exposure to light. For long-term storage store with a desiccant. Stable as supplied for 12 months from date of receipt.
Solubility:	· DMSO ≤ 110 mM For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 3.70 mL of DMSO. Prepare stock solution fresh before use. Information regarding stability of small molecules in solution has rarely been reported, however, as a general guide we recommend storage in DMSO at -20°C. Aliquot into working volumes to avoid repeated freeze-thaw cycles. The effect of storage of stock solution on compound performance should be tested for each application. Compound has low solubility in aqueous media. For use as a cell culture supplement, stock solution should be diluted into culture medium immediately before use. Avoid final DMSO concentration above 0.1% due to potential cell toxicity.

Published Applications

DIFFERENTIATION
· Inhibits adipocyte differentiation in 3T3-L1 cell culture (Hwang et al.).
· Control of osteoblast and adipocyte cell fates in mouse bone marrow cells (Dang et al.).
CANCER RESEARCH
· Inhibits growth of leukemia, lymphoma, neuroblastoma, gastric, breast, and prostate cancer cells (Sarkar & Li).

References

Akiyama T et al. (1987) Genistein, a specific inhibitor of tyrosine-specific protein kinases. J Biol Chem 262(12): 5592–5.
Dang Z-C et al. (2003) Peroxisome proliferator-activated receptor (PPAR) as a molecular target for the soy phytoestrogen genistein. J Biol Chem 278(2): 962–7.
Hwang J-T et al. (2005) Genistein, EGCG, and capsaicin inhibit adipocyte differentiation process via activating AMP-activated protein kinase. Biochem Biophys Res Commun 338(2): 694–9.
Sarkar FH & Li Y. (2002) Mechanisms of cancer chemoprevention by soy isoflavone genistein. Cancer Metastasis Rev 21(3/4): 265–80.
Thomas P & Dong J. (2006) Binding and activation of the seven-transmembrane estrogen receptor GPR30 by environmental estrogens: A potential novel mechanism of endocrine disruption. J Steroid Biochem Mol Biol 102(1): 175–9.

Related Small Molecules

For a complete list of small molecules available from STEMCELL Technologies, visit www.stemcell.com/smallmolecules or contact us at techsupport@stemcell.com.

This product is hazardous. Please refer to the Safety Data Sheet (SDS).