

Small Molecules

Piceatannol

Naturally occurring resveratrol analog

Catalog #100-1165

25 mg



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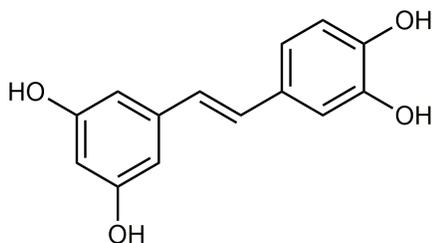
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Product Description

Piceatannol is a phenol antioxidant found in grapes, passion fruit, white tea, and Japanese knotweed (Piotrowska et al.). Besides antioxidative effects, piceatannol demonstrates anti-proliferative, anti-inflammatory, and cardioprotective properties (Rotondo et al.). Piceatannol is an inhibitor of Syk kinase ($IC_{50} = 10 \mu\text{M}$; Dash), a tyrosine kinase that coordinates immune-recognition receptors and downstream signaling pathways in various hematopoietic cells, such as B cells, mast cells, platelets, and macrophages (Oliver et al.). In addition, it has shown to be able to activate sirtuin 1 (SIRT1) (Howitz et al.), SIRT2 (Gracia et al.), and SIRT5 while inhibiting SIRT3 (Gertz et al.). Piceatannol has also been reported to induce immunomodulatory effects in a variety of immune cells (Kim et al.).

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|--------------------|---------------------------------------|
| Alternative Names: | Not applicable |
| CAS Number: | 10083-24-6 |
| Chemical Formula: | $C_{14}H_{12}O_4$ |
| Molecular Weight: | 244.2 g/mol |
| Purity: | $\geq 98\%$ |
| Chemical Name: | 3,3',4,5'-Tetrahydroxy-trans-stilbene |
| Structure: | |



Properties

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|----------------------|---|
| Physical Appearance: | A beige powder |
| Storage: | Product stable at -20°C as supplied. As a precaution, STEMCELL recommends storing all small molecules away from direct light. For long-term storage, store with a desiccant. Stable as supplied for 12 months from date of receipt. |
| Solubility: | <ul style="list-style-type: none">• DMSO $\leq 40 \text{ mM}$• Absolute ethanol $\leq 40 \text{ mM}$ <p>For example, to prepare a 10 mM stock solution in DMSO, resuspend 10 mg in 4.10 mL of DMSO.</p> <p>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.</p> <p>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 or absolute ethanol concentration above 0.1% due to potential cell toxicity.</p> |

Published Applications

DIFFERENTIATION

- Stimulates osteoblast differentiation potentially via BMP-2 in MG-63 and hFOB cells (Chang et al.).
- Increases the number of astrocytes in neural stem cell cultures undergoing astrocytic differentiation (Arai et al.).

IMMUNOLOGY

- Inhibits release of histamine in mast cells (Oliver et al.).
- Inhibits TNF-induced NF- κ B activation and NF- κ B-mediated gene expression in myeloid, lymphocyte and epithelial cells (Ashikawa et al.).
- Blocks NF- κ B activation induced by LPS, PMA, ceramide, okadaic acid, and H₂O₂ in myeloid (KBM-5) cells (Ashikawa et al.).

CANCER RESEARCH

- Induces cell death in BJAB Burkitt-like lymphoma cells by activating caspase-3 and mitochondrial permeability (Wieder et al.).
- Inhibits DU145 and PC-3 cells proliferation by inducing apoptosis through the reduction of poly (ADP-ribose) polymerase (PARP) expression, cleavage of caspase 3 and apoptosis inducing factor AIF, and an increase in cytochrome c (Hsieh et al.).
- Inhibits iNOS expression in dextran sulfate sodium-induced models of mouse colitis (Youn J et al.).
- Recently shown to possess senotherapeutic-like activity. Reduces the number of senescent mesenchymal stromal cells after genotoxic stress and in senescent replicative cultures (Alessio et al.).

References

- Alessio N et al. (2021) Biomolecular evaluation of piceatannol's effects in counteracting the senescence of mesenchymal stromal cells: a new candidate for senotherapeutics? *Int J Mol Sci* 22(21): 11619.
- Arai D et al. (2016) Piceatannol is superior to resveratrol in promoting neural stem cell differentiation into astrocytes. *Food Funct* 7(10): 4432–41.
- Ashikawa K et al. (2002) Piceatannol inhibits TNF-induced NF- κ B activation and NF- κ B-mediated gene expression through suppression of I κ B α kinase and p65 phosphorylation. *J Immunol* 169(11): 6490–7.
- Chang J-K et al. (2006) Piceatannol stimulates osteoblast differentiation that may be mediated by increased bone morphogenetic protein-2 production. *Eur J Pharmacol* 551(1–3): 1–9.
- Dash A. (2010) Evidence for the presence of non-receptor protein tyrosine kinases in algal cells. *Acta Physiol Plant* 32(1): 177–82.
- Gertz M et al. (2012) A molecular mechanism for direct sirtuin activation by resveratrol M. Massiah (Ed.). *PLoS One* 7(11): e49761.
- Hsieh T-C et al. (2012) AKT/mTOR as novel targets of polyphenol piceatannol possibly contributing to inhibition of proliferation of cultured prostate cancer cells. *ISRN Urol* 2012: 1–8.
- Howitz KT et al. (2003) Small molecule activators of sirtuins extend *Saccharomyces cerevisiae* lifespan. *Nature* 425(6954): 191–6.
- Kim D-H et al. (2015) Piceatannol inhibits effector T cell functions by suppressing TcR signaling. *Int Immunopharmacol* 25(2): 285–92.
- Meléndez García R et al. (2016) Prolactin protects retinal pigment epithelium by inhibiting sirtuin 2-dependent cell death. *EBioMedicine* 7: 35–49.
- Oliver JM et al. (1994) Inhibition of mast cell Fc epsilon R1-mediated signaling and effector function by the Syk-selective inhibitor, piceatannol. *J Biol Chem* 269(47): 29697–703.
- Piotrowska H et al. (2012) Biological activity of piceatannol: leaving the shadow of resveratrol. *Mutat Res Mutat Res* 750(1): 60–82.
- Rotondo S et al. (1998) Effect of trans-resveratrol, a natural polyphenolic compound, on human polymorphonuclear leukocyte function. *Br J Pharmacol* 123(8): 1691–9.
- Wieder T et al. (2001) Piceatannol, a hydroxylated analog of the chemopreventive agent resveratrol, is a potent inducer of apoptosis in the lymphoma cell line BJAB and in primary, leukemic lymphoblasts. *Leukemia* 15(11): 1735–42.
- Youn J et al. (2009) Resveratrol and piceatannol inhibit iNOS expression and NF- κ B activation in dextran sulfate sodium-induced mouse colitis. *Nutr Cancer* 61(6): 847–54.

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