

Product Information

RESVERATROL Sigma Prod. No. R5010

CAS NUMBER: 501-36-0

SYNONYM: trans-3,4',-5-trihydroxystilbene; 3,4',5-stilbenetriol;
trans-resveratrol; (E)-5-(p-hydroxystyryl)resorcinol¹

PHYSICAL DESCRIPTION:

Appearance: White powder with yellow cast

Molecular formula: C₁₄H₁₂O₃

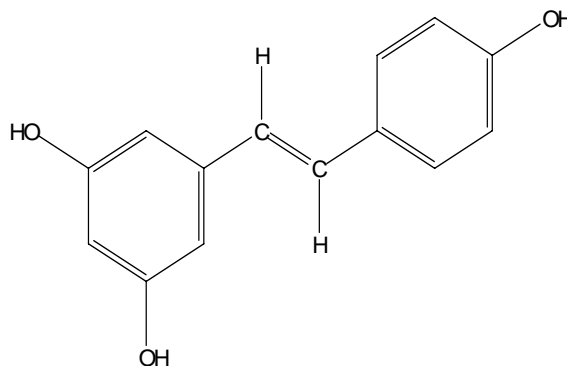
Molecular weight: 228.2

Absorbance:

E^{mM}(218 nm) = 21.5 (ethanol)²

E^{mM}(306 nm) = 30.0 (ethanol)²

E^{mM}(320 nm) = 29.1 (ethanol)²



Comparison spectra for cis- and trans-resveratrol have been published.⁶

STORAGE / STABILITY AS SUPPLIED:

If stored at -20°C the product should be stable at least two years.²

SOLUBILITY / SOLUTION STABILITY:

Resveratrol is soluble in EtOH at 50 mg/mL, in DMSO at least 16 mg/mL and is only very slightly soluble (warming required) in water at 3 mg/100 mL.²

A solution of 5 mM in 96% ethanol (by volume) was stable for at least 12 weeks at 4°C when protected from light. Irradiation for 5-10 minutes at 254 nm and intensity of 990 μW/cm² of a trans-resveratrol solution in 0.2 M phosphoric acid-acetonitrile (4:1, v/v) to give a new peak which was shown to be the cis isomer in an amount identical to the decrease in the trans isomer.³

GENERAL REMARKS:

Resveratrol, a hydroxylated stilbene found in grapes, wines, mulberries and other food products was purified and shown to have cancer chemopreventive activity in assays representing three major stages of carcinogenesis.⁴ (Chemoprevention is the prevention of cancer by ingestion of chemical agents that reduce the risk of carcinogenesis.) In *vitro* tests, resveratrol inhibited free-radical formation in leukemia cells treated with a phorbol ester, inhibited mutations in another cell line and stimulated quinone reductase (which detoxifies carcinogens).⁴

GENERAL REMARKS: (continued)

Resveratrol reduced both the number of skin tumors that developed per mouse and the number of mice developing tumors in skin tests on mice.^{4,5} Orally administered resveratrol lowered lipid levels in the liver of rats and in humans. Siemann and Creasy analyzed selected wines for resveratrol and the factors possibly affecting its concentration.⁶ They reported an absorption spectra for trans- and cis-resveratrol.⁶ Grape flavinoids (including resveratrol) have been reported to help thin the blood, to detoxify bad LDL cholesterol, strengthen blood vessels, boost immunity, fight allergies and to inhibit cancer.⁷ Resveratrol has been correlated with inhibition of platelet aggregation.⁸ Research by Williams et al. in press (1977) indicates that trans-resveratrol has anti-estrogenic properties which may be involved in the reduction of breast cancer risk.⁹

QUALITY CONTROL SYSTEMS:

Gas Chromatography -

Derivative: TMS

Capillary column: 30 m x 0.32 mm ID with 0.25 µm particles

Temperature (°C): injector 280 detector 280 Flow rate: 25 cm/s He

Column temp program: 260 to 280°C @ 4 deg/min

Solvent: Sigma Sil A 10 mg/mL

Volume Injected 1.0 µL

Retention time: approximately 5 min

Thin Layer Chromatography -

System: Silica gel plates

Solvent: 30 parts n-butanol/20 parts pyridine/20 parts water/6 parts glacial acetic acid

Detection: iodine vapor or methanolic sulfuric acid spray

Sample dissolved at 50 mg/mL in acetone, spotted from 0.5 to 250 µg

R_f approximately 0.7

REFERENCES:

1. *Merck Index*, 12th ed., #8326 (1996).
2. Sigma quality control.
3. Goldberg, D.M. et al., *J. Chromatogr.*, vol. A 708, 89-98 (1995).
4. Jang, M. et al, *Science*, 275, 218 (1997).
5. *Chemical and Engineering News*, January 13, 1997, p. 20.
6. Siemann, E.H. and Creasy, L.L., *Amer. J. Enol. Vitic*, 43, 49 (1992).
7. *USA Weekend*, Jan 31 - Feb 2 (1997).
8. Chung, M. et al., *Planta Med.*, 58, 274 (1992).
9. Williams, R.L. and Elliot, M. *Virginia Academy of Science Abstracts*, May 1997 (in press); cited in *Wine Institute Newsflash: Health & Social Issues*, Vol. 2 (no. 12), May 1997.

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