

## Retinol

### Chemical Properties

CAS No. : 68-26-8

Formula: C<sub>20</sub>H<sub>30</sub>O

Molecular Weight: 286.45

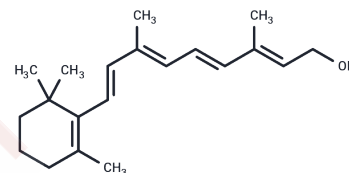
Appearance: no data available

Storage:

keep away from direct sunlight, store under nitrogen,

store at low temperature

Powder: -20°C for 3 years | In solvent: -80°C for 1 year



### Biological Description

|               |   |
|---------------|---|
| Description   | Retinol (Alphalin) and derivatives of retinol that play an essential role in metabolic functioning of the retina, the growth of and differentiation of epithelial tissue, the growth of bone, reproduction, and the immune response. Dietary vitamin A is derived from a variety of CAROTENOIDS found in plants. It is enriched in the liver, egg yolks, and the fat component of dairy products.   |
| Targets(IC50) | Others  |
| In vitro      | <p><b>METHODS:</b> The human SH-SY5Y neuronal cell line was treated with Retinol (1-20 <math>\mu</math>M) for 24 h. Cell viability was measured by MTT assay and SRB assay.</p> <p><b>RESULTS:</b> Retinol at 7, 10 and 20 <math>\mu</math>M significantly reduced cell viability. concentrations below 5 <math>\mu</math>M did not affect MTT reduction or SRB doping in SH-SY5Y cells, but at 7 <math>\mu</math>M these parameters decreased, indicating a reduction in the number of viable cells compared to the control group. [1]</p> <p><b>METHODS:</b> Human hepatocellular carcinoma cells, HepG2, were treated with Retinol (1 <math>\mu</math>M) for 24 h. Retinol distribution was examined using Flow cytometry.</p> <p><b>RESULTS:</b> After 1 day of treatment with 1 <math>\mu</math>M Retinol, the percentage of Retinol-positive HepG2 cells in the total cell population increased from 17.6% to 69.8%. Fluorescence analysis showed that Retinol was located in the cytoplasm of HepG2 cells. [2]</p> |
| In vivo       | <p><b>METHODS:</b> To study placental pharmacokinetics and teratogenicity, Retinol (10-100 mg/kg) was administered by gavage to pregnant mice on day 11 of gestation.</p> <p><b>RESULTS:</b> No teratogenic effects were observed after administration of 10 mg/kg Retinol. Pharmacokinetic studies showed moderate increases in retinyl esters, retinol, and all-trans-retinoic acid in plasma, embryonic tissues, placenta, yolk sac membranes, and extra-embryonic fluids. 100 mg/kg Retinol administration resulted in a high incidence of severe fetal malformations. There was a significant increase in retinyl esters and retinol in all compartments, including the embryo, and the polar metabolites all-trans-retinoic acid and all-trans-4-oxoretinoic acid were produced in large amounts. [3]</p>   |
| Kinase Assay  | Complementation of SCR7 Inhibition with Purified Ligase IV: Complementation experiment is carried out by adding increasing concentrations of purified Ligase IV/XRCC4 complex (30, 60, and 120 fmol) along with the oligomeric DNA substrates (5' compatible and 5'-5' noncompatible ends) to the SCR7-treated extracts. Reactions are incubated for 2 h at 25°C. The reaction products are then resolved on 8% denaturing PAGE. The gel is dried and exposed and the signal is detected with a PhosphorImager  |

and analyzed with Multi Gauge (V3.0) software.

### Solubility Information

|            |  |
|------------|--|
| Solubility | Ethanol: 50 mg/mL (174.55 mM),Sonication is recommended.<br>DMSO: 0.61 mg/mL (2.13 mM),Sonication is recommended.<br>(< 1 mg/ml refers to the product slightly soluble or insoluble) |
|------------|--|

### Preparing Stock Solutions

|       | 1mg       | 5mg        | 10mg       |
|-------|-----------|------------|------------|
| 1 mM  | 3.491 mL  | 17.4551 mL | 34.9101 mL |
| 5 mM  | 0.6982 mL | 3.491 mL   | 6.982 mL   |
| 10 mM | 0.3491 mL | 1.7455 mL  | 3.491 mL   |
| 50 mM | 0.0698 mL | 0.3491 mL  | 0.6982 mL  |

Please select the appropriate solvent to prepare the stock solution, according to the solubility of the product in different solvents. Please use it as soon as possible.

### Reference

Kunzler A, et al. Retinol (Vitamin A) Increases  $\alpha$ -Synuclein,  $\beta$ -Amyloid Peptide, Tau Phosphorylation and RAGE Content in Human SH-SY5Y Neuronal Cell Line. *Neurochem Res.* 2017 Oct;42(10):2788-2797.

Bi G, Liang J, Shan G, et al.Retinol saturase mediates retinoid metabolism to impair a ferroptosis defense system in cancer cells.*Cancer Research.*2023: CAN-22-3977.

Hwang I, et al. Retinol from hepatic stellate cells via STRA6 induces lipogenesis on hepatocytes during fibrosis. *Cell Biosci.* 2021 Jan 6;11(1):3.

Eckhoff C, et al. Transplacental pharmacokinetics and teratogenicity of a single dose of retinol (vitamin A) during organogenesis in the mouse. *Toxicol Lett.* 1989 Aug;48(2):171-84.

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