Product Information

- Name: Retinoic Acid (also known as Vitamin A Acid, Tretinoin, ATRA)
- CAS No. : 302-79-4
- Molecular Weight: 300.44 g/mol
- Formula: $C_{20}H_{28}O_2$
- Appearance: Light yellow to yellow solid powder

Biological Activity

- Target and Mechanism: A metabolite of vitamin A and a natural agonist of RAR nuclear receptors (RARα/β/γ) with IC_{50} values of 14 nM for all three subtypes. It also binds to PPARβ/δ with a Kd of 17 nM. It plays important roles in cell growth, differentiation, and organogenesis and can inhibit the transcription factor Nrf2 through RARα activation.
- Cell differentiation: Used to induce differentiation in various cell types (e.g., at 1 μM for P19 cells; ED_{50} of 2.4 nM for HL-60 differentiation).
- Anti-proliferation: Exhibits anti-proliferative effects in many cancer cell lines (e.g., IC_{50} of 0.58 μM in MCF-7 cells; 0.006 μM in T47D cells; 2 μM in PC-3 cells).
- Common concentrations: Used in a wide range from nanomolar to micromolar concentrations depending on the cell line and assay (e.g., 100 nM in OCI-AML3 cells; 20 μM in MCF-7 cells).

Handling and Storage

- Storage: Powder: Store at -20°C (sealed, away from moisture and light).
- In Solvent: Store at -80°C for up to 6 months, or at -20°C for up to 1 month (sealed, away from moisture and light). Protect from light at all times.
- Solubility: Soluble in DMSO at 50 mg/mL (166.42 mM) with ultrasonic assistance (<60°C). Note: Hygroscopic DMSO can significantly affect solubility; use freshly opened DMSO.

Precautions

- This product is for research use only and must not be used for clinical diagnosis or treatment.
- Retinoic Acid is light-sensitive and should be protected from light during handling and storage.
- Always wear appropriate personal protective equipment (gloves, lab coat) and handle it in a fume hood. Follow standard laboratory safety regulations for chemical handling and waste disposal.