Trans-retinoic acid (RA) is an activator of the retinoic acid receptor (RAR) that exhibits anti-fibrotic, antiviral, antibacterial, immunomodulatory, and anticancer chemotherapeutic activities. RA is a vitamin A carboxylic acid that is clinically used to treat acne vulgaris, keratosis pilaris, and acute promyelocytic leukemia (APL). In vivo, RA inhibits fibroblast proliferation and scar formation and decreases levels of TGF-β1, IL-6, and NF-κB. This compound also induces expression of IFNα in cells infected with enterovirus 71, decreasing viral infectivity. In subjects with APL, retinoic acid forces promyelocytes to differentiate into normal blood cells. In cutaneous squamous cell carcinoma cells, RA induces G1 phase cell cycle arrest, increases expression of p21 and p27, decreases expression of cyclin D1/CDK4 and cyclin E/CDK2, and induces apoptosis. RA decreases cellular cholesterol and inhibits Mycobacterium in an NPC2-dependent manner. This compound also induces expression of hedgehog (Hh) signaling receptor Patched 1, inhibiting Hh signaling.

**References**


Chomienne C, Ballerini P, Baltrand N, et al. All-trans retinoic acid in acute promyelocytic leukemias. II. In vitro studies:

**Caution:** This product is intended for laboratory and research use only. It is not for human or drug use.