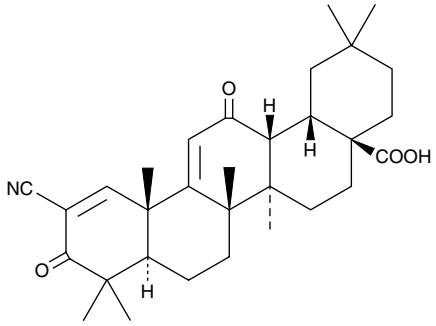
Product Information

CDDO

Item No. 81035

CAS Registry No.: 218600-44-3
Formal Name: 2-cyano-3,12-dioxo-oleana-1,9(11)-dien-28-oic acid
Synonyms: Bardoxolone, RTA 401
MF: $C_{31}H_{41}NO_4$
FW: 491.7
Purity: ≥95%
Stability: ≥2 years at -20°C
Supplied as: A crystalline solid
UV/Vis.: λ_{max}: 240 nm



Laboratory Procedures

For long term storage, we suggest that CDDO be stored as supplied at -20°C. It should be stable for at least two years.

CDDO is supplied as a crystalline solid. A stock solution may be made by dissolving the CDDO in the solvent of choice. CDDO is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of CDDO in these solvents is approximately 5 mg/ml.

CDDO is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, CDDO should first be dissolved in ethanol and then diluted with the aqueous buffer of choice. CDDO has a solubility of approximately 0.5 mg/ml in a 1:1 solution of ethanol:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

CDDO is a synthetic oleanane triterpenoid that blocks the cellular synthesis of inducible nitric oxide synthase and inducible COX-2 in INF-γ-activated mouse macrophages with an IC_{50} value of 0.4 nM.[1] By suppressing reactive oxygen and nitrogen species (ROS/RNS) formation, it promotes the cellular control of ROS/RNS levels that would lead to DNA damage associated with tumorigenesis.[2] In various cancer cell lines, CDDO has been shown to specifically inhibit proliferation and induce apoptosis.[2] Mechanism studies revealed that CDDO is a ligand for peroxisome proliferator-activated receptor γ, and also that it induces genes regulated by Nrf2, including heme oxygenase-1 and eotaxin-1, which play a role in antioxidant response element signaling activity.[3-5]

References

1. Honda, T., Rounds, B.V., Gribble, G.W., *et al.* Design and synthesis of 2-cyano-3,12-dioxoolean-1,9-dien-28-oic acid, a novel and highly active inhibitor of nitric oxide production in mouse macrophages. *Bioorg. Med. Chem. Lett.* **8**, 2711-2714 (1998).
2. Suh, N., Wang, Y., Honda, T., *et al.* A novel synthetic oleanane triterpenoid, 2-cyano-3,12-dioxoolean-1,9-dien-28-oic acid, with potent differentiating, antiproliferative, and anti-inflammatory activity. *Cancer Res.* **59**, 336-341 (1999).
3. Ferguson, H.E., Kulkarni, A., Lehmann, G.M., *et al.* Electrophilic peroxisome proliferator-activated receptor-γ ligands have potent antifibrotic effects in human lung fibroblasts. *Am. J. Respir. Cell Mol. Biol.* **41**, 722-730 (2009).
4. Liby, K., Hock, T., Yore, M.M., *et al.* The synthetic triterpenoids, CDDO and CDDO-imidazolide, are potent inducers of heme oxygenase-1 and Nrf2/ARE signaling. *Cancer Res.* **65**, 4789-4798 (2005).
5. Fourtounis, J., Wang, I.-M., Mathieu, M.-C., *et al.* Gene expression profiling following NRF2 and KEAP1 siRNA knockdown in human lung fibroblasts identifies CCL11/Eotaxin-1 as a novel NRF2 regulated gene. *Respir. Res.* **13(1)**, [In press] (2012).

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