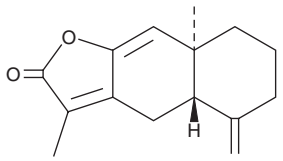
PRODUCT INFORMATION

Atractylenolide I

Item No. 25061

CAS Registry No.:	73069-13-3
Formal Name:	4aS,5,6,7,8,8aS-hexahydro-3,8a-dimethyl-5-methylene-naphtho[2,3-b]furan-2(4H)-one
MF:	$C_{15}H_{18}O_2$
FW:	230.3
Purity:	≥98%
UV/Vis.:	λ_{max}: 276 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

Laboratory Procedures

Atractylenolide I is supplied as a crystalline solid. A stock solution may be made by dissolving the atractylenolide I in the solvent of choice which should be purged with an inert gas. Atractylenolide I is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of atractylenolide I in ethanol is approximately 1 mg/ml and approximately 2 mg/ml in DMSO and DMF.

Atractylenolide I is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, atractylenolide I should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. Atractylenolide I has a solubility of approximately 0.09 mg/ml in a 1:10 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Atractylenolide I is a sesquiterpene that has been found in the rhizomes of *A. macrocephala* and has diverse biological activities, including anti-inflammatory, anti-angiogenic, anti-tumor, and antidepressant properties.[1-4] It inhibits LPS-induced increases in TNF-α and nitric oxide (NO) production, as well as inducible nitric oxide synthase (iNOS) activity, in murine peritoneal macrophages (IC_{50}s = 23.1, 41, and 67.3 µM, respectively).[1] Atractylenolide I reduces pouch fluid weight, inflammatory cell count, granuloma weight, and vascular index (ID_{50}s = 24.18, 19.46, 14.44, and 15.15 mg/kg, respectively) in a mouse air pouch granuloma model induced by Freund's complete adjuvant (FCA).[2] It also reduces the number of microvessels in the air pouch wall by 58.27% when administered at a dose of 20 mg/kg and reduces the blood levels of TNF-α, IL-1β, IL-6, VEGF, placenta growth factor (PlGF), and bFGF in a dose-dependent manner in a mouse model of FCA-induced granuloma. Atractylenolide I inhibits the growth of T-24, 5637, RT4, and 253J bladder cancer cells *in vitro* (IC_{50}s = 12.8-63.7 µM) and reduces tumor growth in T-24 and 253J mouse xenograft models in a dose-dependent manner.[3] In a mouse model of depression induced by chronic unpredictable mild stress, atractylenolide I reverses stress-induced decreases in hippocampal levels of serotonin (5-HT; Item No. 14332) and norepinephrine (Item No. 16673) and reduces immobility time in the forced swim and tail suspension tests in a dose-dependent manner, indicating antidepressant-like activity.[4]

References

1. Li, C.-Q., He, L.-C., and Jin, J.-Q. *Phytother. Res.* **21(4)**, 347-353 (2007).
2. Wang, C., Duan, H., and He, L. *Eur. J. Pharmacol.* **612(1-3)**, 143-152 (2009).
3. Yu, R., Yu, B.-X., Chen, J.-F., *et al. J. Exp. Clin. Cancer Res.* **35:40**, (2016).
4. Gao, H., Zhu, X., Xi, Y., *et al. Exp. Ther. Med.* **15(2)**, 1574-1579 (2018).

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