

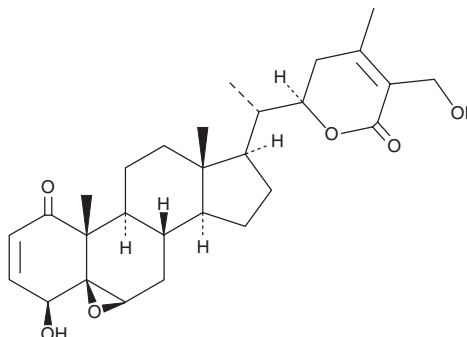
PRODUCT INFORMATION



Withaferin A

Item No. 11352

CAS Registry No.: 5119-48-2
Formal Name: 5 β ,6 β -epoxy-4 β ,22R,27-trihydroxy-1-oxo- δ -lactone-ergosta-2,24-dien-26-oic acid
Synonyms: NSC 101088, NSC 273757
MF: C₂₈H₃₈O₆
FW: 470.6
Purity: \geq 95%
UV/Vis.: λ_{max} : 214 nm
Supplied as: A crystalline solid
Storage: -20°C
Stability: \geq 2 years
Item Origin: Plant/*Withania somnifera*



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

Laboratory Procedures

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

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

Description

Withaferin A is a steroidal lactone that has been found in *W. somnifera* with diverse biological activities.^{1,2} It binds to and induces aggregation of vimentin intermediate filaments in cultured endothelial cells and fibroblasts, inducing apoptosis when used at concentrations ranging from 2 to 25 μ M. It also induces formation of perinuclear aggregates in other intermediate filament networks including peripherin, neurofilament-triplet protein, and keratin as well as disrupts the organization of microtubules and actin/microfilaments.² Withaferin A induces noncanonical ferroptosis *via* induction of lipid peroxidation through interaction with Kelch-like ECH-associated protein 1 (KEAP1) in IMR-32 neuroblastoma cells, an effect that is blocked by the ferroptosis inhibitors ciclopirox olamine and ferrostatin-1 (Item No. 17729).³ It also binds to and inhibits glutathione peroxidase 4 (GPX4) in IMR-32 cells. *In vivo*, withaferin A (4 mg/kg) reduces intratumor GPX4 expression and induces tumor regression in an IMR-32 mouse xenograft model. Withaferin A (2 mg/kg) also inhibits angiogenesis in a mouse model of injury-induced corneal neovascularization.¹

References

1. Bargagna-Mohan, P., Hamza, A., Kim, Y., et al. *Chem. Biol.* **14**(6), 623-634 (2007).
2. Grin, B., Mahammad, S., Wedig, T., et al. *PLoS One* **7**(6), 1-13 (2012).
3. Hassannia, B., Wiernicki, B., Ingold, I., et al. *J. Clin. Invest.* **128**(8), 3341-3355 (2018).

WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the [complete](#) Safety Data Sheet, which has been sent via email to your institution.

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