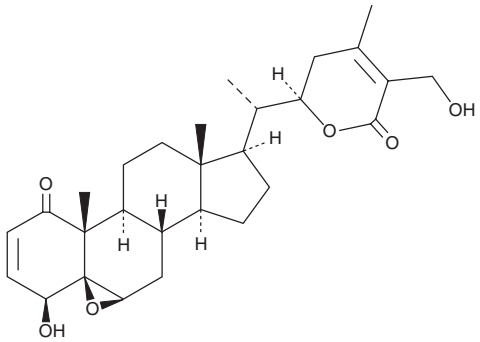
PRODUCT INFORMATION

Withaferin A

Item No. 11352

CAS Registry No.:	5119-48-2
Formal Name:	5β,6β-epoxy-4β,22R,27-trihydroxy-1-oxo-δ-lactone-ergosta-2,24-dien-26-oic acid
Synonyms:	NSC 101088, NSC 273757
MF:	$C_{28}H_{38}O_6$
FW:	470.6
Purity:	≥95%
UV/Vis.:	λ_{max}: 214 nm
Supplied as:	A crystalline solid
Storage:	-20°C
Stability:	≥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 µM. 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).

CAYMAN CHEMICAL
1180 EAST ELLSWORTH RD
ANN ARBOR, MI 48108 · USA
PHONE: [800] 364-9897
[734] 971-3335
FAX: [734] 971-3640
CUSTSERV@CAYMANCHEM.COM
WWW.**CAYMANCHEM**.COM