



LKT Laboratories, Inc.

## Withaferin A

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### Product Information

Product ID W3576

CAS No. 5119-48-2

**Chemical Name**

**Synonym**

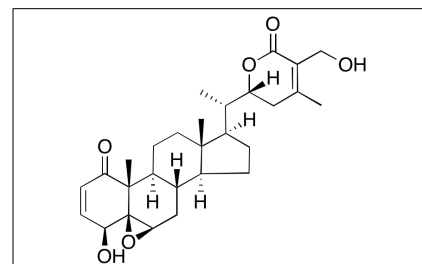
Formula  $C_{28}H_{38}O_6$

Formula Wt. 470.6

Melting Point 241-245°C

Purity  $\geq 98\%$

Solubility Methanol, Ethanol, DMSO



**Bulk quantities available upon request**

Product ID	Size
W3576	1 mg
W3576	5 mg

Store Temp 4°C

Ship Temp Ambient

**Description** Withaferin A is a steroid lactone initially produced by *Withania somnifera* that exhibits anticancer chemotherapeutic, chemopreventive, and anti-inflammatory activities. Withaferin A inhibits vimentin, an intermediate filament, preventing breast cancer cell growth in vitro and in vivo. Withaferin A also increases phosphorylation of JNK, ERK, and p38 MAPK and increases levels of Mcl-1, inducing apoptosis in other in vitro models of breast cancer. Across other breast cancer cell lines, withaferin A increases activation of p53, downregulates expression of ER $\alpha$ , and activates Notch2 and Notch4, inhibiting cellular migration and growth. In ovarian cancer cells, withaferin A downregulates expression of Notch1, Notch3, chc25C, Akt, and Bcl-2, inhibiting growth and colony formation. Withaferin A also inhibits tumor growth of pancreatic xenografts in vivo through ATP-independent inhibition of heat shock protein 90 (HSP90). Additionally, this compound inhibits phosphorylation of I $\kappa$ B kinase, activation of NF- $\kappa$ B, and decreases levels of NO and iNOS in vitro.

**References** Antony ML, Lee J, Hahm ER, et al. Growth Arrest by the Antitumor Steroidal Lactone Withaferin A in Human Breast Cancer Cells Is Associated with Downregulation and Covalent Binding at Cysteine-303 of  $\beta$ -Tubulin. *J Biol Chem*. 2013 Dec 2. [Epub ahead of print]. PMID: 24297176.

Hahm ER, Lee J, Singh SV. Role of mitogen-activated protein kinases and Mcl-1 in apoptosis induction by withaferin A in human breast cancer cells. *Mol Carcinog*. 2013 Sep 9. [Epub ahead of print]. PMID: 24019090.

Lee J, Sehrawat A, Singh SV. Withaferin A causes activation of Notch2 and Notch4 in human breast cancer cells. *Breast Cancer Res Treat*. 2012 Nov;136(1):45-56. PMID: 22965833.

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Hahm ER, Lee J, Huang Y, et al. Withaferin a suppresses estrogen receptor- $\alpha$  expression in human breast cancer cells. *Mol Carcinog*. 2011 Aug;50(8):614-24. PMID: 21432907.

Yu Y, Hamza A, Zhang T, et al. Withaferin A targets heat shock protein 90 in pancreatic cancer cells. *Biochem Pharmacol*. 2010 Feb 15;79(4):542-51. PMID: 19769945.

Oh JH, Lee TJ, Park JW, et al. Withaferin A inhibits iNOS expression and nitric oxide production by Akt inactivation and down-

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