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**Product Data Sheet**

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Product Name:  $\alpha$ -mangostin

Cat. No.: GN10468

**Chemical Properties**

Cas. No. 6147-11-1

Chemical Name 1,3,6-trihydroxy-7-methoxy-2,8-bis(3-methylbut-2-enyl)xanthen-9-one

SMILES CC(=CCC1=C(C=C2C(=C1O)C(=O)C3=C(C(=C(C=C3O2)O)OC)CC=C(C)C)O)CFormula  $C_{24}H_{26}O_6$  M.Wt 410.4Solubility  $\geq 135.6\text{mg/mL}$  in DMSO Storage

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution: ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure **Protocol****Cell experiment:** IDH1+/+ and IDH1**Animal experiment:**

Rats: Male Wistar rats are divided into 3 groups and treated with intraperitoneal injections of TAA (200 mg/kg). One subgroup is left untreated whereas the other two are treated either with 100 mg/kg  $\alpha$ -mangostin or vehicle alone (80% DMSO, 20% water), which are administered intraperitoneally 3 times per week for a total of 4 weeks. The incidence of fibrotic nodules on the liver and the serum levels of the liver enzymes aspartate transaminase (AST) and alanine transaminase (ALT) are measured [4].

**Caution: Product has not been fully validated for medical applications. For research use only.**

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### References:

[1]. Kim HJ, et al. Discovery of  $\alpha$ -mangostin as a novel competitive inhibitor against mutant isocitrate dehydrogenase-1. Bioorg Med Chem Lett. 2015 Dec 1;25(23):5625-31.

[2]. Lee HN, et al. Antitumor and apoptosis-inducing effects of  $\alpha$ -mangostin extracted from the pericarp of the mangosteen fruit (*Garcinia mangostana* L.) in YD-15 tongue mucoepidermoid carcinoma cells. Int J Mol Med. 2016 Apr;37(4):939-48.

### Background

$\alpha$ -mangostin is an inhibitor of PI3K/AKT with IC50 value of 32  $\mu$ M (pancreatic cancer cell hTERT-HPNE for 48 hours) [1].

PI3K (phosphatidylinositol-3 kinases) is a member of lipid kinase family and has serine / threonine (Ser/Thr) kinase activity. Akt plays an important role in modulating the function of numerous substrates involved in the regulation of cell survival, cell cycle progression and cellular growth. Recently, it has been shown that PI3K/Akt signaling pathway components are frequently overexpressed in a variety of human cancers [1] [2].  $\alpha$ -mangostin is a potent FAS inhibitor. When pancreatic cancer cell line BxPc-3,  $\alpha$ -mangostin treatment suppressed the cell viability and EMT process via suppressing the activation of PI3K/AKT pathway[1].

In BALb/c nude mice model with BxPc-3 cells xenograft, administration of  $\alpha$ -mangostin (50 or 100 mg/kg) dramatically inhibited tumor growth with a dose-dependent manner

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[1].

It is also reported that  $\alpha$ -mangostin could target other signaling pathway. In breast cancer cell line,  $\alpha$ -mangostin suppressed FAS expression and inhibited intracellular FAS activity that resulted in the cells apoptosis [3]. When tested with breast cancer cell line MCF-7,  $\alpha$ -mangostin promoted cell apoptosis via regulating NF- $\kappa$ B, Bax/Bcl-2 and heat shock protein 70 [4].

### References:

[1]. Xu, Q., et al., *alpha-Mangostin suppresses the viability and epithelial-mesenchymal transition of pancreatic cancer cells by downregulating the PI3K/Akt pathway. Biomed Res Int, 2014. 2014: p. 546353.*

[2]. Carnero, A. and J.M. Paramio, *The PTEN/PI3K/AKT Pathway in vivo, Cancer Mouse Models. Front Oncol, 2014. 4: p. 252.*

[3]. Li, P., W. Tian, and X. Ma, *Alpha-mangostin inhibits intracellular fatty acid synthase and induces apoptosis in breast cancer cells. Mol Cancer, 2014. 13: p. 138.*

[4]. Ibrahim, M.Y., et al., *alpha-Mangostin from Cratoxylum arborescens demonstrates apoptogenesis in MCF-7 with regulation of NF-kappaB and Hsp70 protein modulation in vitro, and tumor reduction in vivo. Drug Des Devel Ther, 2014. 8: p. 1629-47.*

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