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PRODUCT INFORMATION



Gliotoxin-¹³C₁₃
Item No. 9003827

Formal Name: (3R,5aS,6S,10aR)-6-hydroxy-3-(hydroxymethyl-¹³C)-2-(methyl-¹³C)-2,3,5a,6-tetrahydro-10H-3,10a-epidithiopyrazino[1,2-a]indole-1,4-dione-1,3,4,5a,6,7,8,9,9a,10,10a-¹³C₁₁

Synonym: Aspergillin-¹³C₁₃

MF: [¹³C]₁₃H₁₄N₂O₄S₂

FW: 339.3

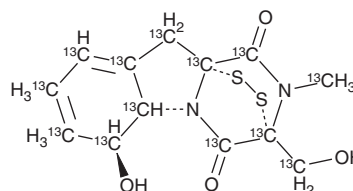
Purity: ≥95%

UV/Vis.: λ_{max}: 265 nm

Supplied as: A solution in acetonitrile

Storage: -20°C

Stability: ≥1 year



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

Description

Gliotoxin-¹³C₁₃ is intended for use as an internal standard for the quantification of gliotoxin (Item No. 11433) by GC- or LC-MS. Gliotoxin is an immunosuppressive mycotoxin produced by pathogenic strains of *Aspergillus* and other fungi with diverse biological activities.¹⁻⁸ It inhibits 20S proteasomal chymotrypsin activity (IC₅₀ = 10 μM), blocking the degradation of IκBα and preventing the activation of NF-κB.^{2,3} Gliotoxin induces apoptosis in monocytes and dendritic cells and reduces phagocytosis by neutrophils.^{4,5} It suppresses viral infection by Nipah and Hendra virus in HEK293T cells (IC₅₀s = 149 and 579 nM, respectively).⁶ Under reducing conditions, gliotoxin inhibits leukotriene A₄ hydrolase (LTA₄H; Item No. 10007817) epoxide hydrolase activity, but not aminopeptidase activity, and leukotriene B₄ (LTB₄; Item No. 20110) synthesis in neutrophils and monocytes.⁷ *In vivo*, gliotoxin (5 mg/kg) reduces LTB₄ plasma levels and blocks peritoneal neutrophil infiltration in a mouse model of peritonitis induced by zymosan A (Item No. 21175). It also inhibits geranylgeranyltransferase I and farnesyltransferase (IC₅₀s = 17 and 80 μM, respectively).⁸

References

1. Kwon-Chung, K.J. and Sugui, J.A. What do we know about the role of gliotoxin in the pathobiology of *Aspergillus fumigatus*? *Med. Mycol.* **47**(Suppl 1), S97-S103 (2009).
2. Kroll, M., Arenzana-Seisdedos, F., Bachelier, F., et al. The secondary fungal metabolite gliotoxin targets proteolytic activities of the proteasome. *Chem. Biol.* **6**(10), 689-698 (1999).
3. Pahl, H.L., Krauss, B., Schulze-Osthoff, K., et al. The immunosuppressive fungal metabolite gliotoxin specifically inhibits transcription factor NF-κB. *J. Exp. Med.* **183**(4), 1829-1840 (1996).
4. Anselmi, K., Stolz, D.B., Nalesnik, M., et al. Gliotoxin causes apoptosis and necrosis of rat Kupffer cells *in vitro* and *in vivo* in the absence of oxidative stress: Exacerbation by caspase and serine protease inhibition. *J. Hepatol.* **47**(1), 103-113 (2007).
5. Orciuolo, E., Stanzani, M., Canestraro, M., et al. Effects of *Aspergillus fumigatus* gliotoxin and methylprednisolone on human neutrophils: Implications for the pathogenesis of invasive aspergillosis. *J. Leukoc. Biol.* **82**(4), 839-848 (2007).
6. Aljofan, M., Sganga, M.L., Lo, M.K., et al. Antiviral activity of gliotoxin, gentian violet and brilliant green against Nipah and Hendra virus *in vitro*. *Virology* **6**, 187 (2009).
7. König, Pace, S., Pein, H., et al. Gliotoxin from *Aspergillus fumigatus* abrogates leukotriene B₄ formation through inhibition of leukotriene A₄ hydrolase. *Cell. Chem. Biol.* **26**(4), 524-534 (2019).
8. Vigushin, D.M., Mirsaidi, N., Brooke, G., et al. Gliotoxin is a dual inhibitor of farnesyltransferase and geranylgeranyltransferase I with antitumor activity against breast cancer *in vivo*. *Med. Oncol.* **21**(1), 21-30 (2004).

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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