

Product Data Sheet

Product Name: Isosorbide di-(methyl fumarate)

Cat. No.: GC79814

Chemical Properties

Cas. No. 2013542-44-2

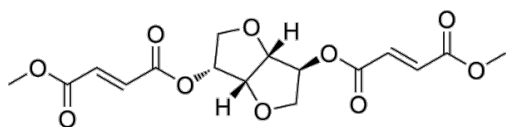
Formula $C_{16}H_{18}O_{10}$ M.Wt 370.31

Solubility DMSO: 33.33 mg/mL (90.01 mM; Need ultrasonic) Storage Store at -20°C

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



Background

Isosorbide di-(methyl fumarate) (IDMF), topical DMF derivative, is an NRF2/ARE pathway activator. Isosorbide di-(methyl fumarate) downregulates ANCR targets, modulates epithelial differentiation,

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represses proinflammatory cytokine genes, IL-17A- and TNF-induced keratinocyte genes, psoriatic skin lesion-specific genes, and immune response genes. Isosorbide di-(methyl fumarate) stimulates oxidative stress response gene transcription, reduces erythema and scaling in Imiquimod -induced psoriasiform lesions. Isosorbide di-(methyl fumarate) exhibits no genotoxicity or radiation sensitivity in skin fibroblasts, is nonirritating and nonsensitizing in rodent models. Isosorbide di-(methyl fumarate) can be used for the research of psoriasis vulgaris ^[1].

In Vivo, Isosorbide di-(methyl fumarate) (100 mg of topical cream; topical; 5 days/week; 13 days) applied to normal mouse tail skin increases granular layer thickness and orthokeratosis without inducing skin irritation or pathological changes^[1]. Isosorbide di-(methyl fumarate) (200-2000 mg/kg; topical; single dose) in female Wistar rats cause no acute dermal toxicity, skin irritation, or systemic adverse effects^[1]. Isosorbide di-(methyl fumarate) (500 mg; topical; single dose; 4 h) in male New Zealand White rabbits causes only transient, very slight skin irritation that resolves rapidly^[1]. Isosorbide di-(methyl fumarate) (100 mg; topical; 6 hours on days 0, 7, 14 (induction); 6 hours on day 28 (challenge)) in Hartley guinea pigs does not elicit skin sensitization or systemic adverse effects^[1]. Isosorbide di-(methyl fumarate) (5% lotion; topical; once daily; 6 days) significantly reduces erythema, scaling, and skin thickness in Imiquimod -induced psoriasiform mouse lesions, while modulating gene expression to repress immune responses and support epidermal development^[1].

In Vitro, Isosorbide di-(methyl fumarate) (25-100 µg/mL; 1 h) does not exhibit phototoxicity in neonatal human dermal fibroblasts^[1]. Isosorbide di-(methyl fumarate) (1-200 µg/mL) does not exhibit mutagenic effects in Salmonella typhimurium strains TA1535 and TA1537^[1]. Isosorbide di-(methyl fumarate) (24 h) upregulates genes associated with oxidative stress response and xenobiotic metabolism, while downregulating genes associated with immune response and epithelial differentiation, in cytokine-stimulated human keratinocytes^[1]. Isosorbide di-(methyl fumarate) (1-10 µg/mL; 24 h) activates the NRF2/ARE pathway in human embryonic kidney 293 cells, with significant increases in the expression of the luciferase re- porter gene^[1].

References:

[1]. Bojanowski K, et al. A Sensitization-Free Dimethyl Fumarate Prodrug, Isosorbide Di-(Methyl Fumarate), Provides a Topical Treatment Candidate for Psoriasis. JID Innov. 2021;1(4):100040.

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