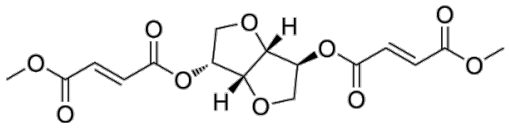
Product Data Sheet

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,

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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