

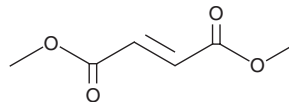
PRODUCT INFORMATION



Dimethyl fumarate

Item No. 14714

CAS Registry No.: 624-49-7
Formal Name: 2E-butenedioic acid, 1,4-dimethyl ester
Synonyms: NSC 25942, NSC 167432, *trans*-Butenedioic Acid dimethyl ester
MF: C₆H₈O₄
FW: 144.1
Purity: ≥95%
Supplied as: A crystalline solid
Storage: -20°C
Stability: ≥4 years



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

Laboratory Procedures

Dimethyl fumarate is supplied as a crystalline solid. A stock solution may be made by dissolving the dimethyl fumarate in the solvent of choice. Dimethyl fumarate is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF), which should be purged with an inert gas. The solubility of dimethyl fumarate in these solvents is approximately 2, 5, and 12 mg/ml, respectively.

Dimethyl fumarate is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, dimethyl fumarate should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Dimethyl fumarate has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

Description

Dimethyl fumarate is a lipophilic electrophile that has profound effects on oxidative and immunological pathways.¹ It rapidly interacts in a Michael addition reaction with glutathione or is metabolized to monomethyl fumarate.¹ Dimethyl fumarate at low micromolar levels activates the nuclear factor erythroid 2-related factor 2 (Nrf2), resulting in an antioxidant response featuring heme oxygenase-1 expression and increased glutathione levels.¹ It also suppresses the expression of pro-inflammatory cytokines and inhibits angiogenesis.^{2,3} Through these actions dimethyl fumarate alters the course of psoriasis and may reduce inflammation related to multiple sclerosis.^{2,4}

References

1. Albrecht, P., Bouchachia, I., Goebels, N., *et al.* Effects of dimethyl fumarate on neuroprotection and immunomodulation. *J. Neuroinflammation* **9**, 163 (2012).
2. Ockenfels, H.M., Schultewolter, T., Ockenfels, G., *et al.* The antipsoriatic agent dimethylfumarate immunomodulates T-cell cytokine secretion and inhibits cytokines of the psoriatic cytokine network. *Br. J. Dermatol.* **139**(3), 390-395 (1998).
3. Garçça-Caballero, M., Març-Beffa, M., Medina, M.I., *et al.* Dimethylfumarate inhibits angiogenesis *in vitro* and *in vivo*: A possible role for its antipsoriatic effect? *J. Invest. Dermatol.* **131**(6), 1347-1355 (2011).
4. Kappos, L., Gold, R., Miller, D.H., *et al.* Efficacy and safety of oral fumarate in patients with relapsing-remitting multiple sclerosis: A multicentre, randomised, double-blind, placebo-controlled phase IIb study. *Lancet.* **372**(9648), 1463-1472 (2008).

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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