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Product Information



CMPF-d₅

Item No. 9001871

Formal Name: 2-(2-carboxyethyl)-4-methyl-5-(propyl-2,2',3,3,3,3-d₅)furan-3-carboxylic acid

MF: C₁₂H₁₁D₅O₅

FW: 245.3

Chemical Purity: ≥98% CMPF

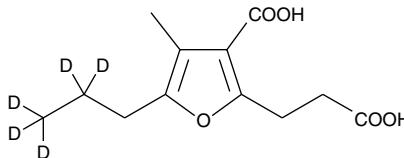
Deuterium

Incorporation: ≥99% deuterated forms (d₁-d₅); ≤1% d₀

Stability: ≥2 years at -20°C

Supplied as: A crystalline solid

UV/Vis.: λ_{max}: 204, 260 nm



Laboratory Procedures

CMPF-d₅ contains five deuterium atoms at the 2, 2', 3, 3, and 3 positions. It is intended for use as an internal standard for the quantification of CMPF (Item No. 10007133) by GC- or LC-mass spectrometry (MS). For long term storage, we suggest that CMPF-d₅ be stored as supplied at -20°C. It should be stable for at least two years.

CMPF-d₅ is supplied as a crystalline solid. A stock solution may be made by dissolving the CMPF-d₅ in the solvent of choice. CMPF-d₅ is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide, which should be purged with an inert gas. The solubility of CMPF-d₅ in these solvents is approximately 30 mg/ml.

CMPF-d₅ is used as an internal standard for the quantification of CMPF by stable isotope dilution MS. The accuracy of the sample weight in this vial is between 5% over and 2% under the amount shown on the vial. If better precision is required, the deuterated standard should be quantitated against a more precisely weighed unlabeled standard by constructing a standard curve of peak intensity ratios (deuterated *versus* unlabeled).

Furan fatty acids are unique, naturally occurring lipids that are found in significant amounts in dietary phospholipids, such as in salmon roe.¹ CMPF is an endogenous metabolite of furan fatty acids in humans. CMPF is highly albumin-bound and accumulates in the serum of uremic patients to concentrations in excess of 0.2 mM. Its primary effect is to inhibit cellular transport and subsequent deiodination of thyroxine (T₄).^{2,3} CMPF is tightly bound to albumin but only moderately inhibits T₄ binding in a direct manner (10-14% at 0.3 mM). However, CMPF effectively displaces competitive T₄ binding molecules from albumin, such as acidic drugs and free fatty acids.³ Therefore, CMPF may indirectly influence T₄ binding to albumin by increasing the serum concentration of competitive binding molecules, particularly free fatty acids such as oleic acid.³

References

1. Ishii, K., Okajima, H., Okada, Y., *et al.* Studies on furan fatty acids of salmon roe phospholipids. *J. Biochem.* **103**(5), 836-839 (1988).
2. Lim, C.-F., Bernard, B.F., De Jong, M., *et al.* A furan fatty acid and indoxyl sulfate are the putative inhibitors of thyroxine hepatocyte transport in uremia. *J. Clin. Endocrinol. Metab.* **76**(2), 318-324 (1993).
3. Lim, C.-F., Stockigt, J.R., Curtis, A.J., *et al.* A naturally occurring furan fatty acid enhances drug inhibition of thyroxine binding in serum. *Metabolism* **42**(11), 1468-1474 (1993).

Related Products

For a list of related products please visit: www.caymanchem.com/catalog/9001871

WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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