

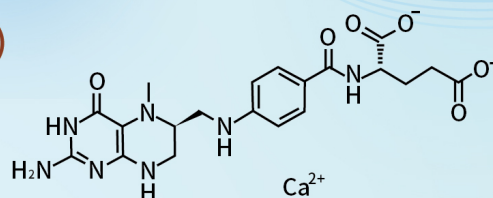
Calcium L-5-Methyltetrahydrofolate



CAS Number: 151533-22-1

Chemical Formula: C₂₀H₂₃CaN₇O₆(anhydrous)

Molecular Weight: 497.52



Description

L-5-Methyltetrahydrofolate calcium (L-5-MTHF-Ca) is the biologically active form of folate, stabilized as a calcium salt. In contrast to folic acid (pteroylglutamic acid), which requires multiple reduction and methylation steps catalyzed by dihydrofolate reductase (DHFR) to convert into active 5-MTHF, L-5-MTHF-Ca directly enters the circulatory system with bioavailability increased by over 2-fold.

Specification

Calcium L-5-Methyltetrahydrofolate USP

Functions

- 1. Overcoming metabolic enzyme barriers.** Approximately 30%-50% of the population carry MTHFR gene mutations (such as C677T polymorphism), leading to reduced folate metabolic enzyme activity. L-5-methyltetrahydrofolate calcium bypasses this rate-limiting step.
- 2. Supporting maternal and fetal health.** L-5-methyltetrahydrofolate calcium is a critical nutrient during pregnancy, effectively preventing fetal neural tube defects and reducing risks of miscarriage and preterm birth. It ensures normal fetal neural development by participating in DNA synthesis and methylation.
- 3. Cardiovascular protection and homocysteine regulation.** As a methyl donor, it directly contributes to the remethylation of homocysteine (Hcy) to methionine, significantly lowering blood Hcy levels in conjunction with vitamin B12. Hcy accumulation induces oxidative stress and endothelial dysfunction; reducing Hcy protects vascular structure, minimizing endothelial damage and arteriosclerosis risk.
- 4. Supporting neurological health.** L-5-methyltetrahydrofolate calcium crosses the blood-brain barrier to promote serotonin and dopamine synthesis/metabolism, alleviating depressive symptoms and improving mood. It also enhances cognitive function (memory and attention) and shows potential in preventing/relieving cognitive decline.

Advantages

- 1. Avoiding unmetabolized folate risks:** High-dose folic acid may accumulate unmetabolized folic acid (UMFA), masking hematological signs of vitamin B12 deficiency (e.g., megaloblastic anemia) and interfering with immune cell function. L-5-MTHF-Ca carries no such risks.
- 2. Reduced drug interactions:** Folic acid may be disrupted by dihydrofolate reductase (DHFR) inhibitors (e.g., methotrexate), while L-5-MTHF-Ca offers broader applicability as it bypasses DHFR dependency.
- 3. Calcium salt crystals address stability concerns.**

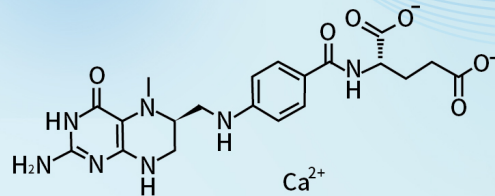
L-5-甲基四氢叶酸钙



CAS号:151533-22-1

化学式: $C_{20}H_{23}CaN_7O_6$ (anhydrous)

分子量:497.52



描述

L-5-甲基四氢叶酸钙 (L-5-MTHF-Ca) 是叶酸的生物活性形式 (以钙盐稳定化)。普通叶酸 (蝶酰谷氨酸) 需经二氢叶酸还原酶 (DHFR) 等多步还原和甲基化才能转化为活性5-MTHF, 而L-5-MTHF-Ca可直接进入循环系统, 生物利用度提高2倍以上。

规格

L-5-甲基四氢叶酸钙 USP

6S-5-甲基四氢叶酸钙 GB14880卫健委2017公告标准

功能

- 1.克服代谢酶障碍。**约30%-50%人群存在 MTHFR基因突变 (如C677T多态性), 导致叶酸代谢酶活性降低, L-5-甲基四氢叶酸钙绕过此限速步骤。
- 2.支持孕妇和胎儿健康。**L-5-甲基四氢叶酸钙是孕妇在孕期的重要营养素, 能够有效预防胎儿神经管缺陷, 降低流产与早产风险。它通过参与DNA合成、甲基化, 确保胎儿神经系统的正常发育。
- 3.心血管保护与同型半胱氨酸调控。**作为甲基供体, 直接参与Hcy再甲基化转化为蛋氨酸的循环, 显著降低血液同型半胱氨酸 (Hcy) 水平, 依赖维生素B12协同作用。Hcy的积累会诱发氧化应激和内皮功能障碍, 通过降低Hcy水平保护血管结构, 减少血管内皮损伤和动脉硬化风险。
- 4.支持神经系统健康。**L-5-甲基四氢叶酸钙能够通过血脑屏障, 促进 5 - 羟色胺、多巴胺的合成与代谢, 减轻抑郁症状, 改善情绪; 有助于改善认知功能, 提高记忆力和注意力, 对于预防和缓解认知衰退具有一定的作用。

优势

- 1.规避未代谢叶酸风险:**高剂量普通叶酸可能积累未代谢叶酸 (UMFA), 掩盖维生素B12缺乏的血液学症状 (如巨幼细胞贫血), 并干扰免疫细胞功能。L-5-MTHF-Ca无此风险
- 2.药物相互作用少:**普通叶酸可能受DHFR抑制剂 (如甲氨蝶呤) 干扰, 而L-5-MTHF-Ca因无需DHFR参与, 适用性更广
- 3.钙盐晶体解决了稳定性问题**