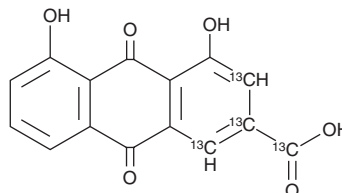


# PRODUCT INFORMATION



Rhein-<sup>13</sup>C<sub>4</sub>  
Item No. 28803

**CAS Registry No.:** 2971753-59-8  
**Formal Name:** 9,10-dihydro-4,5-dihydroxy-9,10-dioxo-2-anthracene-1,3,4-<sup>13</sup>C<sub>3</sub>-carboxylic acid-<sup>13</sup>C  
**Synonym:** Rheic Acid-<sup>13</sup>C<sub>4</sub>  
**MF:** C<sub>11</sub>[<sup>13</sup>C<sub>4</sub>]H<sub>8</sub>O<sub>6</sub>  
**FW:** 288.2  
**Purity:** ≥90%  
**Supplied as:** A solid  
**Storage:** -20°C  
**Stability:** ≥4 years  
**Item Origin:** Synthetic



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

## Laboratory Procedures

Rhein-<sup>13</sup>C<sub>4</sub> is supplied as a solid. A stock solution may be made by dissolving the rhein-<sup>13</sup>C<sub>4</sub> in the solvent of choice, which should be purged with an inert gas. Rhein-<sup>13</sup>C<sub>4</sub> is soluble in the organic solvent DMSO.

## Description

Rhein-<sup>13</sup>C<sub>4</sub> is intended for use as an internal standard for the quantification of rhein (Item No. 17345) by GC- or LC-MS. Rhein is an anthraquinone derivative that has been found in *R. rhubarbarum* and a metabolite of diacerein (Item No. 11710) that has diverse biological activities, including anticancer, antioxidant, and anti-inflammatory activities.<sup>1-4</sup> It induces cell cycle arrest at the S phase and inhibits the proliferation of HepG2 cells when used at concentrations of 40 and 100 μM, respectively.<sup>2</sup> Rhein (100 and 200 μM) also inhibits proliferation of MCF-7 and MDA-MB-435s breast cancer cells under normoxic and hypoxic conditions.<sup>3</sup> It reduces controlled cortical impact-induced decreases in catalase and superoxide dismutase (SOD) activity and malondialdehyde (MDA), glutathione, and glutathione disulfide levels in the brain in a rat model of traumatic brain injury when administered at a dose of 12 mg/kg.<sup>1</sup> Rhein (50 mg/kg per day) reduces increased serum TNF-α, IL-1β, and amylase levels, as well as reduces pancreatic glandular atrophy and fibrosis, in a mouse model of chronic pancreatitis induced by cerulein.<sup>4</sup>

## References

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- Liu, S., Wang, J., Shao, T., *et al.* The natural agent rhein induces β-catenin degradation and tumour growth arrest. *J. Cell. Mol. Med.* **22**(1), 589-599 (2018).
- Fernand, V.E., Losso, J.N., Traux, R.E., *et al.* Rhein inhibits angiogenesis and the viability of hormone-dependent and -independent cancer cells under normoxic or hypoxic conditions *in vitro*. *Chem. Biol. Interact.* **192**(3), 220-232 (2011).
- Tsang, S.W., Zhang, H., Lin, C., *et al.* Rhein, a natural anthraquinone derivative, attenuates the activation of pancreatic stellate cells and ameliorates pancreatic fibrosis in mice with experimental chronic pancreatitis. *PLoS One* **8**(12), 1-15 (2013).

**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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