

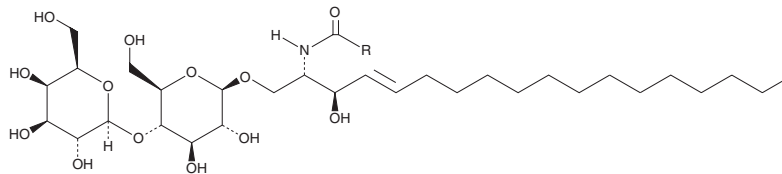
# PRODUCT INFORMATION



## Lactosylceramide (bovine buttermilk)

Item No. 27197

**CAS Registry No.:** 4682-48-8  
**Formal Name:** 1-O-(4-O-β-D-galactopyranosyl-β-D-glucopyranosyl)-ceramide  
**Synonym:** LacCer  
**MF:** C<sub>53</sub>H<sub>101</sub>NO<sub>13</sub> (for tricosanoyl)  
**FW:** 960.4  
**Purity:** ≥98%  
**Supplied as:** A 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

Lactosylceramide (LacCer) (bovine buttermilk) is supplied as a solid. A stock solution may be made by dissolving the LacCer (bovine buttermilk) in the solvent of choice. LacCer (bovine buttermilk) is soluble in a 5:1:0.1 solution of chloroform:methanol:water.

### Description

LacCer is an endogenous bioactive sphingolipid. It is expressed on the plasma membrane of human phagocytes and mediates phagocytosis, chemotaxis, and superoxide generation.<sup>1</sup> LacCer forms membrane microdomains with Lyn kinase and the α<sub>i</sub> subunits of inhibitory G protein-coupled receptors, suggesting a role in cell signaling. Elevated LacCer levels in kidney cortex homogenates and urine are directly correlated with hyperglycemia, insulin resistance, and obesity in *db/db* transgenic diabetic mice.<sup>2</sup> It promotes recruitment of CNS-infiltrating monocytes and microglia and enhances neurodegeneration in mice with chronic experimental autoimmune encephalomyelitis (EAE), a model of multiple sclerosis (MS).<sup>3</sup> Increased levels of LacCer in atherosclerotic plaques are correlated with increased levels of the pro-inflammatory cytokines IL-6, monocyte chemoattractant protein-1 (MCP-1), and macrophage inflammatory protein 1β (MIP-1β), as well as lipids and macrophages.<sup>4</sup> LacCer is also upregulated during the secretory phase of the menstrual cycle.<sup>5</sup> Lactosylceramide (bovine buttermilk) contains lactosylceramide molecular species with primarily C22:0, C23:0, and C24:0 fatty acyl chain lengths. As this product is derived from a natural source, there may be variations in the sphingoid backbone.

### References

1. Iwabuchi, K., Nakayama, H., Oizumi, A., *et al.* Role of ceramide from glycosphingolipids and its metabolites in immunological and inflammatory responses in humans. *Mediators Inflamm.* **120748** (2015).
2. Subathra, M., Korrapati, M., Howell, L.A., *et al.* Kidney glycosphingolipids are elevated early in diabetic nephropathy and mediate hypertrophy of mesangial cells. *Am. J. Physiol. Renal Physiol.* **309(3)**, F204-F215 (2015).
3. Mayo, L., Trauger, S.A., Blain, M., *et al.* Regulation of astrocyte activation by glycolipids drives chronic CNS inflammation. *Nat. Med.* **20(10)**, 1147-1156 (2014).
4. Edsfeldt, A., Dunér, P., Ståhlman, M., *et al.* Sphingolipids contribute to human atherosclerotic plaque inflammation. *Arterioscler. Thromb. Vasc. Biol.* **36(6)**, 1132-1140 (2016).
5. Mikami, M., Tukazaki, K., Nozawa, S., *et al.* Menstrual cycle-associated expression of 2-hydroxy fatty acyl phytosphingosine-containing GlcCer, LacCer and Gb3Cer in human uterine endometrium. *Biochim Biophys. Acta.* **1125(1)**, 104-109 (1992).

#### 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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