

MATREYA NEWSLETTER

FOR GLYCO/SPHINGOLIPID RESEARCH

MARCH 2014

Sphingosines

Sphingosine is the characteristic structural unit of sphingolipids such as ceramides, globosides, sulfatides, sphingomyelin, gangliosides, and others.^{1,2} It is most abundant in nervous tissue and cell membranes. Mammalian cells contain mostly *D-erythro* sphingosines having C18 and C20 bases with a smaller amount of C16 bases. Some bacteria and fungi have predominantly C16 or even shorter sphingosine bases. C17 sphingosine bases are easily separated by reverse phase HPLC and readily identified by mass spectrometry. They are also usually absent from, or present in low amounts in, natural samples making them an ideal choice for internal standards. Lysosphingolipids (sphingolipids containing a free amine on carbon 3) inhibit protein kinase C activity resulting in the pathogenesis of sphingolipidoses such as Krabbe's disease and Gaucher's disease.³ Sphingosine can be phosphorylated via two kinases to form sphingosine-1-phosphate, which has important signaling functions. While sphingosines and ceramides can induce apoptosis,⁴ sphingosine-1-phosphate can promote cell survival or proliferation. Sphingosine has also been shown to cause an increase in the cytoplasmic calcium level of cells.

Matreya is pleased to offer an extensive line of sphingosines for your research needs including all four isomers, deuterated, even chain-length, and odd chain-length. These high purity products are ideal whether you require well-defined sphingosine bases of natural length, various isomers of sphingosine, or sphingosine internal standards.

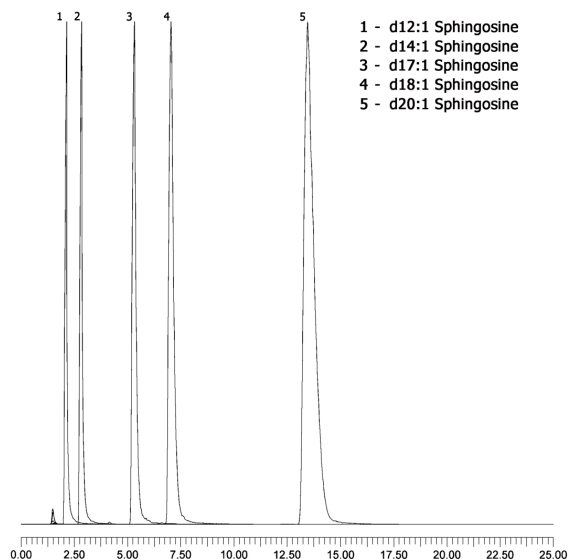


Figure 1: HPLC chromatogram overlay of sphingosine bases of varying chain lengths. Column: reverse phase C18 150 mm x 4.6 mm, 5 µm; mobile phase: methanol/water/trifluoroacetic acid 86:14:0.5, 1.0 ml/minute; Detector: ELSD.

Product Description

Sphingosines with C18 sphingoid bases

	<u>Catalog #</u>	<u>Selling Size</u>	<u>Purity</u>
D-erythro-sphingosine, D ₉	2079	1 mg	98+%
D-erythro-sphingosine	1802	25 mg	98+%
D-threo-sphingosine	1827	5 mg	98+%
L-threo-sphingosine	1806	10 mg	98+%
L-erythro-sphingosine	1826	5 mg	98+%

Sphingosines with sphingoid bases other than C18

D-erythro-C12-sphingosine	1838	5 mg	98+%
D-erythro-C14-sphingosine	1833	5 mg	98+%
omega-N-NBD-D-erythro-C14-sphingosine (fluorescent)	1634	1 mg	98+%
D-erythro-C16-sphingosine	1835	5 mg	98+%
D-erythro-C17-sphingosine	2082	5 mg	98+%
D-erythro-C20-sphingosine	1840	5 mg	98+%

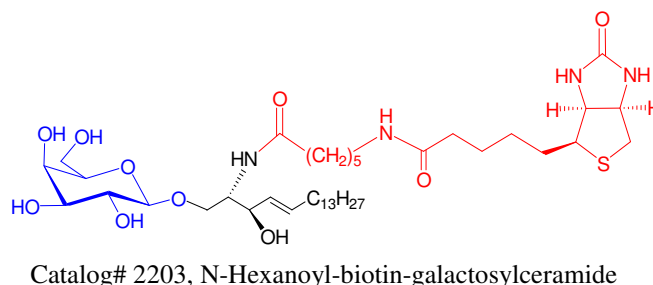
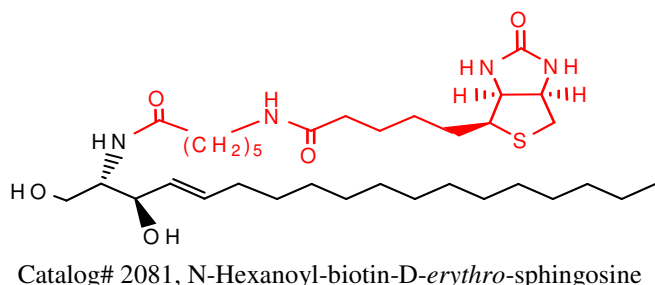
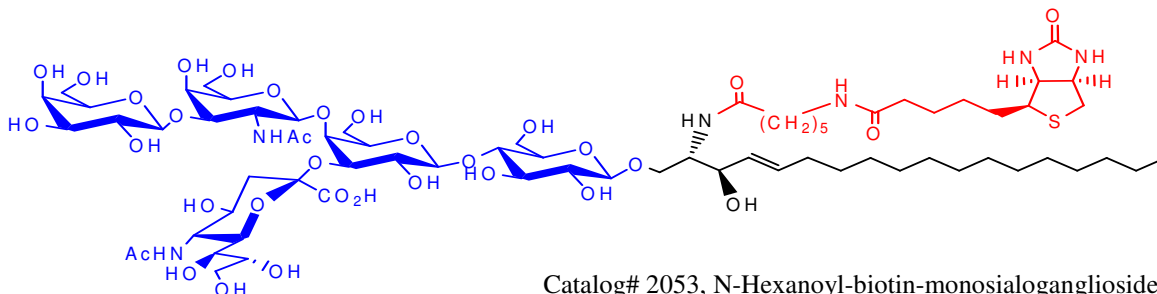
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References:

1. A. Merrill, Jr. "De Novo Sphingolipid Biosynthesis: A Necessary, but Dangerous, Pathway" *The Journal of Biological Chemistry*, Vol. 277(29) pp. 25843–25846, 2002
2. J. Shayman "Sphingolipids" *Kidney International*, Vol. 58 pp. 11-26, 2000
3. Y. Hannun and R. Bell "Lysosphingolipids inhibit protein kinase C: implications for the sphingolipidoses." Vol. 235:4789 pp. 670, 1987
4. V. Nava et al. "Sphingosine Enhances Apoptosis of Radiation-resistant Prostate Cancer Cells" *Cancer Research*, Vol. 60 pp. 4468-4474, 2000

Biotinylated Sphingolipids



Matreya is pleased to offer ceramide and monosialoganglioside GM₁ acylated with biotin. These sphingolipid analogues contain a biotin label attached to the amine of the sphingosine moiety via a hexanoic acid linker and are ideal for use in sphingolipid research. The biotin structure allows for attachment of the ganglioside to streptavidin and avidin making them extremely useful for binding to substrates and for toxin detection^(1,2).

Product Description

N-Hexanoyl-biotin-monosialoganglioside GM₁
 N-Hexanoyl-biotin-D-erythro-sphingosine
 N-Hexanoyl-biotin-galactosylceramide

Catalog

2053
 2081
 2203

Selling Size

500 µg
 5 mg
 5 mg

Purity

98+%
 98+%
 98+% **New!**

References:

1. A. Pukin et al. (2011) *Org. Biomol. Chem.*, 9(16):5809-5815
2. A. Mukhopadhyay et al. (2009) *FASEB*, 23(3):751-763

Tocotrienols: The Cutting Edge of Vitamin E

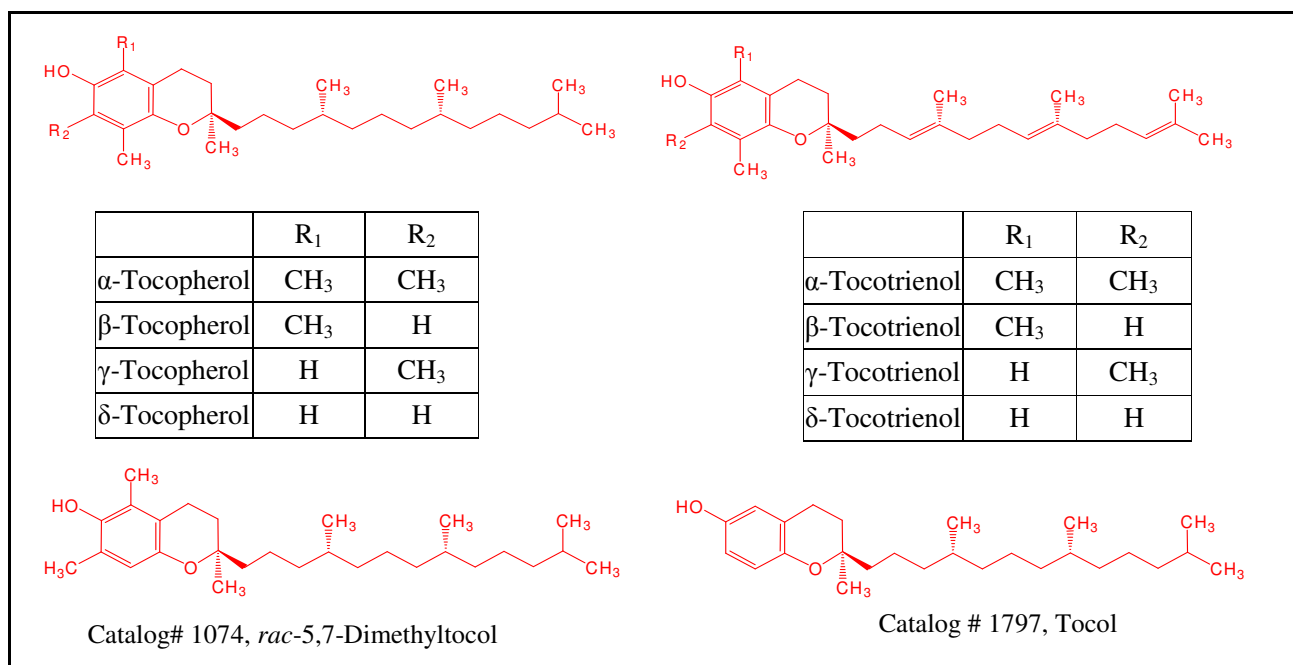
In a recent book "Current Pharmaceutical Design", the authors referred to tocotrienols as "the 21st century form of vitamin E". Tocotrienols have the following biological properties:

- Inhibits oxidative damage to lipid and proteins.
- Lowers the cholesterol synthesis by degrading HMG CoA reductase protein.
- Mediates cardiac dysfunction by reverse ischemic-reperfusion.
- Induces C-Src. Protein expression.
- Prevents oxytosis and offers protection against Alzheimer's disease, Parkinson's disease and Huntington's disease.
- Exerts anticancer property thru cell cycle arrest.
- Induction of apoptosis, inhibition of angiogenesis antitumor activity.
- Possesses antitumor and anti-inflammatory, antidiabetic and antiadipogenic effect.

1. Current Pharmaceutical Design, vol 17(21) p2196-2205

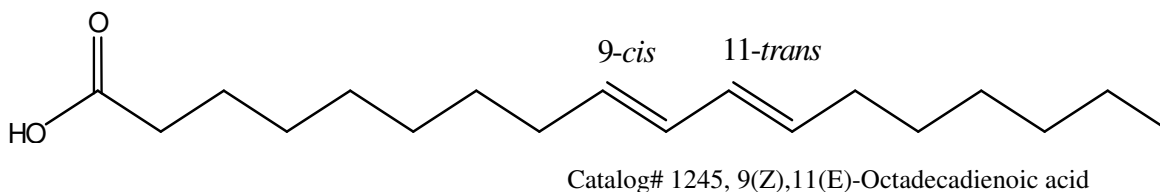
2. Packer, L, Weber, Stefan, and Rimbach, G J. Nutrition 131:3695-3735 (2001)

Matreya is pleased to introduce the full line of highly purified **Tocopherols** and **Tocotrienols** along with **Tocols** as internal standard markers. We have the capability to produce these compounds in **multigram** sizes to accommodate your research.



	<u>Catalog#</u>	<u>Product Description</u>	<u>Size</u>	<u>Purity</u>
New!	2109	α- Tocotrienol	25 mg	98 ⁺ % TLC/98 ⁺ % GC
New!	2110	β- Tocotrienol	25 mg	98 ⁺ % TLC/98 ⁺ % GC
New!	2111	γ- Tocotrienol	25 mg	98 ⁺ % TLC/98 ⁺ % GC
New!	2112	δ-Tocotrienol	25 mg	98 ⁺ % TLC/98 ⁺ % GC
	1072	<i>rac</i> -α-Tocopherol	50 mg	95 ⁺ % TLC/98 ⁺ % GC
	1071	<i>rac</i> -β-Tocopherol	50 mg	95 ⁺ % TLC/98 ⁺ % GC
	1073	<i>rac</i> -γ-Tocopherol	50 mg	95 ⁺ % TLC/98 ⁺ % GC
	1790	δ-Tocopherol	50 mg	95 ⁺ % TLC/98 ⁺ % GC
	1074	<i>rac</i> -5,7-Dimethyltolcol	50 mg	95 ⁺ % TLC/98 ⁺ % GC
	1797	Tocol	50 mg	95 ⁺ % TLC/98 ⁺ % GC

Symposium on Conjugated Linoleic Acids



At the American Chemical Society's national conference in Philadelphia in August 2012, a symposium on CLA was held in honor of Dr. Michael Pariza who is an outstanding pioneer in the field of CLA.

"It is most gratifying to see the emerging clinical research on the positive effects of CLA in humans—for example, reducing body fat while maintaining lean muscle, enhancing the immune system, and other potential benefits," Dr. Pariza said. "Important applications of CLA in animal agriculture include improving the vitality of dairy cows, and potentially reducing the need for antibiotics in poultry. This is an exciting time for CLA research."¹

Matreya is very proud to have high-purity CLA's available for research. Our CLA's are 98+% pure and will enable research to focus and study the CLA research.

We also highly recommend the review article written by G. S. Kelly, N.D.² emphasizing various biological activities of CLA.

<u>Product Description</u>	<u>Catalog #</u>	<u>Selling Size</u>	<u>Purity</u>
9(Z),11(E)-Octadecadienoic acid	1245; 1245-1; 1245-10	25 mg; 1 g; 10 g	98+%
Methyl 9(Z),11(E)-Octadecadienoate	1255	25 mg	98+%
9(E),11(E)-Octadecadienoic acid	1181	25 mg	98+%
Methyl 9(E),11(E)-Octadecadienoate	1257	25 mg	98+%
9(Z),11(Z)-Octadecadienoic acid	1248; 1248-1	25 mg; 1 g	96+%
Methyl 9(Z),11(Z)-Octadecadienoate	1256	25 mg	96+%
10(E),12(Z)-Octadecadienoic acid	1249; 1249-1; 1249-10	25 mg; 1 g; 10 g	98+%
Methyl 10(E),12(Z)-Octadecadienoate	1254	25 mg	98+%

References:

1. <http://www.nutritionaloutlook.com/news/basf-co-sponsoring-symposium-new-cla-research>
2. G. S. Kelly, N.D. *Alternative Medicine Review* 2001, 4:367