

PRODUCT DATA SHEET

Octadecatrienoic acid (all *cis*-9,12,15)

Catalog number: 1026

Common Name: *alpha*-Linolenic acid; C18:3
(all *cis*-9,12,15) Fatty acid

Source: natural, plant

Solubility: chloroform, hexane, ethyl ether

CAS number: 463-40-1

Molecular Formula: C₁₈H₃₀O₂

Molecular Weight: 278

Storage: -20°C

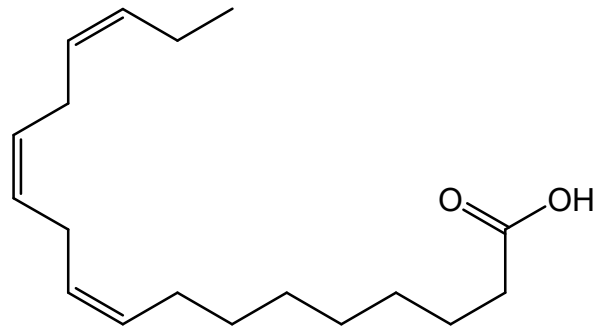
Purity: TLC: 99%, GC: 99%

TLC System: hexane/ethyl ether/acetic acid
(80:20:1 by vol.)

Appearance: liquid

Application Notes:

This polyunsaturated fatty acid is ideal as a standard and for biological studies. The thylakoid membranes of photosynthetic plants as well as many seed oils are rich in linolenic acid. It is an essential fatty acid in animals and has been attributed to many vital processes. Linolenic acid is converted *in vitro* to EPA, DPA, and DHA in animals, each of which has many beneficial functions.¹ There is evidence that it is able to help reduce inflammation and prevent coronary heart disease² although these are still being investigated. Low levels of linolenic acid in animals results in significant deviations in polyunsaturated fatty acid composition and a marked decrease in cervonic acid (DHA). Recovery from this deficiency is very slow when linolenic acid intake is increased. Linolenic acid helps to decrease mortality from toxic substances, maintains activity of the Na⁺ and K⁺ ATPase enzymes in animals (which control the ionic flow resulting from nerve transmission) and is critical in maintaining other enzyme activity. A lack of enzyme activity from linolenic acid deficiency leads to a decrease in learning ability. The retina is very rich in n-3 polyunsaturated fatty acids including linolenic acid and a deficiency in this fatty acid alters the electroretinogram resulting in decreased eye function.³



Selected References:

1. G. Burdge and S. Wootton "Conversion of α -linolenic acid to eicosapentaenoic, docosapentaenoic and docosahexaenoic acids in young women" *British Journal of Nutrition*, Vol. 88 pp. 411-420, 2002
2. M. Lorgeril et al. "Mediterranean alpha-linolenic acid-rich diet in secondary prevention of coronary heart disease" *The Lancet*, Vol. 343(8911) pp. 1454-1459, 1994
3. J. Bourre et al. "The Effects of Dietary α -Linolenic Acid on the Composition of Nerve Membranes, Enzymatic Activity, Amplitude of Electrophysiological Parameters, Resistance to Poisons and Performance of Learning Tasks in Rats" *American Institute of Nutrition*, Vol. 119(12) pp. 1880-1892, 1989

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