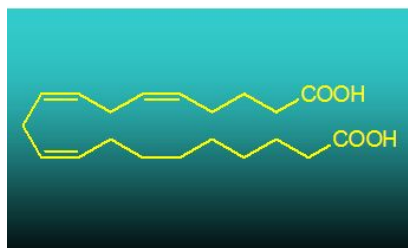


Lipid of the Month: October 2009

5(Z),8(Z),11(Z)-Eicosatrien-1,20-dioic acid



5(Z),8(Z),11(Z)-Eicosatrien-1,20-dioic acid is an ω -oxidized analog of Mead acid, 5(Z),8(Z),11(Z)-eicosatrienoic acid. It is a potential substrate for animal arachidonate 5-lipoxygenase and plant linoleate 9-lipoxygenase and serves as a tool for exploring the substrate head-to-tail binding modes in lipoxygenase catalysis. In this context, a number of dicarboxylic acid analogs of polyunsaturated fatty acids have been reported to be very poor substrates for soybean lipoxygenase-1 or reticulocyte lipoxygenase, both of which are arachidonate 15-lipoxygenases (1). However, the enzymes did catalyze a slow oxygenation of 8,11-eicosadien-1,20-dioic acid (the 5,6-dihydro analog of Mead dicarboxylic acid) to produce either the 12-hydroperoxide (soybean lipoxygenase) or the 8-hydroperoxide (reticulocyte lipoxygenase) (1).

A C₁₈ polyunsaturated dicarboxylic fatty acid, *i.e.* 6(Z),9(Z)-octadien-1,18-dioic acid or linoleic dicarboxylic acid, has been isolated as the major monomer of polyesters from *Arabidopsis* epidermis (2). This compound is not a substrate for soybean lipoxygenase-1 (1), however, its possible conversions by other plant lipoxygenases deserve investigation.

5(Z),8(Z),11(Z)-Eicosatrien-1,20-dioic acid (A-2030) is prepared by Lipidox using an acetylene coupling technique followed by semihydrogenation. The above-mentioned linoleic dicarboxylic acid will be available shortly.

1. Ivanov, I. *et al.* (1998) *Biochem. J.* 336, 345-352.

2. Bonaventure, G. *et al.* (2004) *Plant J.* 40, 920-930.