

## PRODUCT DATA SHEET

### Malvalic acid

**Catalog No:** 1237

**Common Name:** 8,9-Methyleneheptadec-8-enoic acid; 2-Octyl-1-cyclopropene-1-heptanoic acid

**Source:** Natural, plant

**Solubility:** Hexane, ethyl ether, chloroform, methanol

**CAS No:** 503-05-9

**Molecular Formula:** C<sub>18</sub>H<sub>32</sub>O<sub>2</sub>

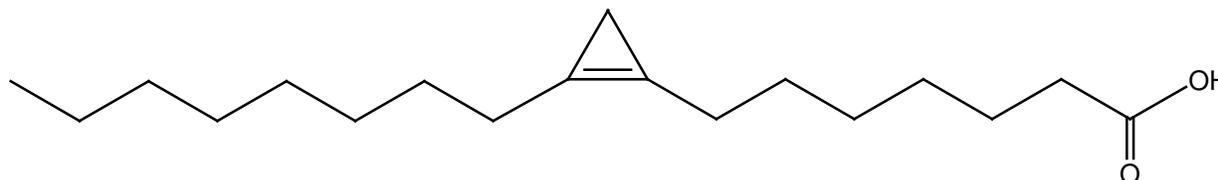
**Molecular Weight:** 280

**Storage:** -20°C

**Purity:** TLC; GC; identity confirmed by MS

**TLC System:** Hexane/ethyl ether/acetic acid  
80:20:1

**Appearance:** liquid



### **Application notes:**

Malvalic acid and its methyl ester are monounsaturated fatty acids containing a cyclopropene ring, which gives them specific and unusual physiological properties. The major sources of malvalic acid are the seed oils of various plants, including *Hibiscus syriacus*, *Sterculia foetida*, cotton, and *Bombax munguba*. Cyclopropenoids, such as malvalic acid, inhibit the enzyme  $\Delta^9$ -desaturase, preventing the conversion of stearic acid to oleic acid, potentially causing significant health problems for organisms which consume them. Cyclopropenoid fatty acids have been reported to have several deleterious effects on mammals, such as carcinogenicity and acute and chronic toxicity.<sup>1,2</sup> Because of the harmful effects of cyclopropenoids, cottonseed oil (a major world-wide edible oil which contains around 1% of these fatty acids) is required to be heat treated and hydrogenated before consumption. *Sterculia foetida* seeds have been used in traditional Chinese medicine as an anti-parasitic drug and recent research has found that sterculic acid and its methyl ester analog have a significant inhibitory effect towards the wide-spread parasite *Toxoplasma gondii*.<sup>3</sup> Oil from *Sterculia foetida* has also been shown to have significant insecticide, and possible anti-fungal properties, making it a potentially useful alternative to synthetic, and more environmentally toxic, compounds.<sup>4,5</sup>

### **Selected References:**

1. X. Bao et al., Characterization of cyclopropane fatty-acid synthase from *Sterculia foetida*, *J Biol Chem.* vol. 278(15) pp. 12846-12853, 2003
2. E. Fehling et al., Preparation of malvalic and sterculic acid methyl esters from *Bombax munguba* and *Sterculia foetida* seed oils, *JAOCs*, vol. 75(12), pp. 1757-1760, 1998
3. P. Hao et al., Sterculic Acid and Its Analogues Are Potent Inhibitors of *Toxoplasma gondii*, *Korean J Parasitol.* vol. 54(2) pp. 139-145, 2016
4. P. Rani and P. Rajasekharreddy, Toxic and antifeedant activities of *Sterculia foetida* (L.) seed crude extract against *Spodoptera litura* (F.) and *Achaea Janata* (L.) *Journal of Biopesticides*, vol. 2(2) pp. 161-164 2009
5. K. Schmid and G. Patterson Effects of cyclopropenoid fatty acids on fungal growth and lipid composition, *Lipids*, vol. 23(3) pp. 248-252, 1988

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