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Product Information

Chlorophyll a from spinach

Product Number **C 5753**

Storage Temperature -0 °C

Product Description

Molecular Formula: $C_{55}H_{72}MgN_4O_5$

Molecular Weight: 893.5

CAS Number: 479-61-8

λ_{max} : 428, 662 nm¹

Extinction coefficient: $E^{mM} = 112$ (428 nm), 86.3 (662 nm)(ether)¹

This product is a green pigment found primarily in plants. It is one of the most important Mg^{2+} complexes in nature. It is capable of channelling the energy of sunlight into chemical energy through the process of photosynthesis. In photosynthesis, the energy absorbed by chlorophyll transforms carbon dioxide and water into carbohydrates and oxygen. In the photosynthetic reaction, carbon dioxide is reduced by water; that is, electrons are transferred from water to carbon dioxide. Chlorophyll assists in this transfer. When chlorophyll absorbs light energy, an electron in chlorophyll is excited from a lower energy state to a higher energy state. In this higher energy state, the electron is more readily transferred to another molecule. This starts a chain of electron-transfer steps, which ends with an electron transferred to carbon dioxide. Meanwhile, the chlorophyll which gave up an electron can accept an electron from another molecule. This is the end of a process, which started with the removal of an electron from water. Thus, chlorophyll is at the center of the photosynthetic oxidation-reduction reaction between carbon dioxide and water.

This product is reported to inhibit lipoxidase in growing pea plants.² It also has ionization potential in aqueous environments.³ It has been used in the photosensitization of the NAD^+ -ascorbate reaction.⁴ Spectral absorption properties of chlorophyll a and b have been reported.¹

The product has been crystallized and has not been purified by HPLC.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

This product is freely soluble in ether, ethanol, acetone, chloroform, carbon disulfide, and benzene.^{5,6} It is sparingly soluble in cold methanol, practically insoluble in petroleum ether, and is not soluble in water.

Storage/Stability

Since this product is sensitive to light, solutions will be unstable when exposed to light. In ethanol solutions, this product is converted to chlorophyll B quickly (approximately 30% decomposition after 30 minutes by HPLC analysis).

References

1. Strain, H. H., et al., *Biochim. Biophys. Acta*, **75**, 306 (1963).
2. Cohen, B-S., et al., Chlorophyll Inhibition of Lipoxygenase in Growing Pea Plants. *J. Agric. Food. Chem.*, **32**, 516-519 (1984).
3. Bernas, D., et al., On the Ionization Potential of Chlorophyll and Bacteriochlorophyll in Aqueous Environment. *Chem. Phys. Lett.*, **104(1)**, 105-108 (1984).
4. Dijkmans, C., et al., Photosensitization of the NAD⁺-Ascorbate Reaction by Lecithin Vesicles Containing Chlorophyll a. *Photosynthetica*, **17**, 391-394 (1983).
5. The Merck Index, 11th ed., Entry# 2155.
6. *Data for Biochemical Research*, 3rd ed., Dawson, R. M. C., et al., Oxford University Press (New York, NY: 1986), p. 232.

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