

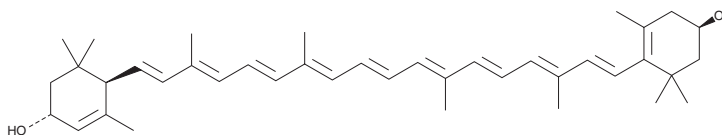
# PRODUCT INFORMATION



## Lutein

Item No. 10010811

**CAS Registry No.:** 127-40-2  
**Formal Name:** (6'R)- $\beta,\epsilon$ -carotene-3R,3'R-diol  
**Synonyms:** E 161b, Xanthophyll  
**MF:** C<sub>40</sub>H<sub>56</sub>O<sub>2</sub>  
**FW:** 568.9  
**Purity:**  $\geq 98\%$   
**UV/Vis.:**  $\lambda_{\max}$ : 268, 445, 474 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:**  $\geq 2$  years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Lutein is supplied as a crystalline solid. A stock solution may be made by dissolving the lutein in the solvent of choice, which should be purged with an inert gas. Lutein is soluble in organic solvents such as chloroform, DMSO, and dimethyl formamide (DMF). The solubility of lutein in chloroform and DMSO is approximately 5 mg/ml and approximately 10 mg/ml in DMF.

Lutein is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, lutein should first be dissolved in DMF and then diluted with the aqueous buffer of choice. Lutein has a solubility of approximately 0.5 mg/ml in a 1:1 solution of DMF:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

Lutein is a dietary carotenoid that has been found in eggs and yellow-colored fruits and vegetables and has diverse biological activities.<sup>1-4</sup> It reduces hyperglycemia-induced mitochondrial DNA damage and production of reactive oxygen species (ROS) and promotes mitochondrial biogenesis in ARPE-19 cells when used at a concentration of 10  $\mu\text{M}$ .<sup>1</sup> Lutein (20 mg/kg) increases nitric oxide (NO) production and decreases serum levels of endothelin-1 (Item No. 24127) in a rat model of hyperhomocysteinemia.<sup>2</sup> Dietary administration of lutein (0.2%) decreases monocyte migration and lesion size in an *ApoE*<sup>-/-</sup> and *Ldlr*<sup>-/-</sup> mouse models of atherosclerosis. Lutein reduces infarct size and cardiac malondialdehyde (MDA), lactate dehydrogenase (LDH), and troponin T levels, and increases cardiac levels of catalase (CAT), superoxide dismutase (SOD), heme oxygenase-1 (HO-1), and Nrf2 in a rat model of heart failure induced by isoproterenol (Item No. 15592).<sup>3</sup> It forms a retinal pigment in human eyes, and high dietary intake of lutein is positively correlated with reduced risk of age-related macular degeneration and cataracts in humans.<sup>4</sup>

### References

1. Nanjiah, H. and Vallikannan, B. *Biotechnol. Appl. Biochem.* **66**(6), 999-1009 (2019).
2. Hajizadeh-Sharafabad, F., Ghoreishi, Z., Maleki, V., et al. *Pharmacol. Res.* **149**, 104477 (2019).
3. Ouyang, B., Li, Z., Ji, X., et al. *Pharm. Biol.* **57**(1), 529-535 (2019).
4. Bungau, S., Abdel-Daim, M., Tit, D.M., et al. *Oxid. Med. Cell. Longev.* 9783429 (2019).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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