

## Mechanism and Kinetic of Antiphotooxidation of Bixin in Metil Linoleat System

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### Abstract

*Bixin belongs to the carotenoid group, present in Bixa orellana tree. It has conjugated double bonds which plays a role as an antiphotooxidant. The objectives of this study were to analyze the quenching mechanisms and kinetics of bixin in photosensitized oxidation of methyl linoleate. The quenching mechanism and kinetic of bixin were studied by the steady-state kinetic method. Samples of 0,  $0.25 \times 10^{-5}$ ,  $0.5 \times 10^{-5}$ ,  $0.75 \times 10^{-5}$ ,  $1.0 \times 10^{-5}$ ,  $2.0 \times 10^{-5}$  and  $3.0 \times 10^{-5}$  M bixin were prepared in ethanol that also contained 0.03, 0.06, 0.09 and 0.12 M methyl linoleate and  $11.36 \times 10^{-6}$  M of erythrosine stored under fluorescent light (4000 lux) at room temperature for 2 hours. The extent of photosensitized oxidation of methyl linoleate was expressed as peroxide value. The steady-state kinetic study indicated that bixin quenched singlet oxygen and exhibited triplet sensitizer quenching mechanism (to minimize the erythrosine photosensitized oxidation of methyl linoleate). The total quenching rate constant of bixin was  $7.7 \times 10^9 \text{ M}^{-1} \text{ s}^{-1}$ .*

**Key words:** bixin, quencher, erythrosine, singlet oxygen