



ISSN (ONLINE) : 2395-695X

ISSN (PRINT) : 2395-695X

Available online at www.ijarbest.com

International Journal of Advanced Research in Biology, Engineering, Science and Technology (IJARBEST)
Vol. 2, Special Issue 8, February 2016 in association with
KAMARAJ COLLEGE OF ENGINEERING AND TECHNOLOGY, VIRUDHUNAGAR
DEPARTMENT OF BIOTECHNOLOGY

ORGANIZES

DBT, NEW DELHI SPONSORED NATIONAL LEVEL CONFERENCE ON CONTEMPORARY TRENDS IN
BIOENERGY AND GREEN TECHNOLOGY: CHALLENGES AND OPPORTUNITIES [ORA-2016]
(25-26TH FEBRUARY 2016)

PHYSICO-CHEMICAL STABILITY EVALUATION AND CHARACTERIZATION OF MICROALGAL LUTEIN EXTRACTED FROM CHLORELLA SALINA

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Abstract

Lutein is an important carotenoid component available in all higher plants and algae. In this study, *Chlorella salina* was used as the source of Lutein and the main purpose of the study was to evaluate the stability of Lutein extract against the different storage conditions. Stabilities of the extracted Lutein were tested with different pH, temperature, irradiation to UV and with supplementation of antioxidant (i.e., ascorbic acid) in light and dark condition over a storage period of 3 weeks. Colour changes of the Lutein extract were monitored using UV-Vis Spectroscopy. The results revealed that Lutein pigment exhibited the greatest stability when stored in dark condition with addition of antioxidant at low temperatures. Without the addition of ascorbic acid, the decay of lutein was faster, which is about 60% decay within 10 days and nearly complete quenching of lutein within 20 days. The bleaching rates were highly dependent on the input of the involved photons and, although not consistently, on the chemical structures of the investigated compounds. The pigments were more stable at alkaline pH region as compared to neutral and acidic condition. In dark condition, the addition of ascorbic acid greatly delayed lutein degradation and concentration ascorbic acid at 1.0% w/v displayed greatest pigment retention. In conclusion, Lutein pigments were sensitive to light exposure and acidic pH condition and could be stabilized by higher concentration of ascorbic acid.

Keywords: Lutein; stability; UV-irradiation; degradation index