

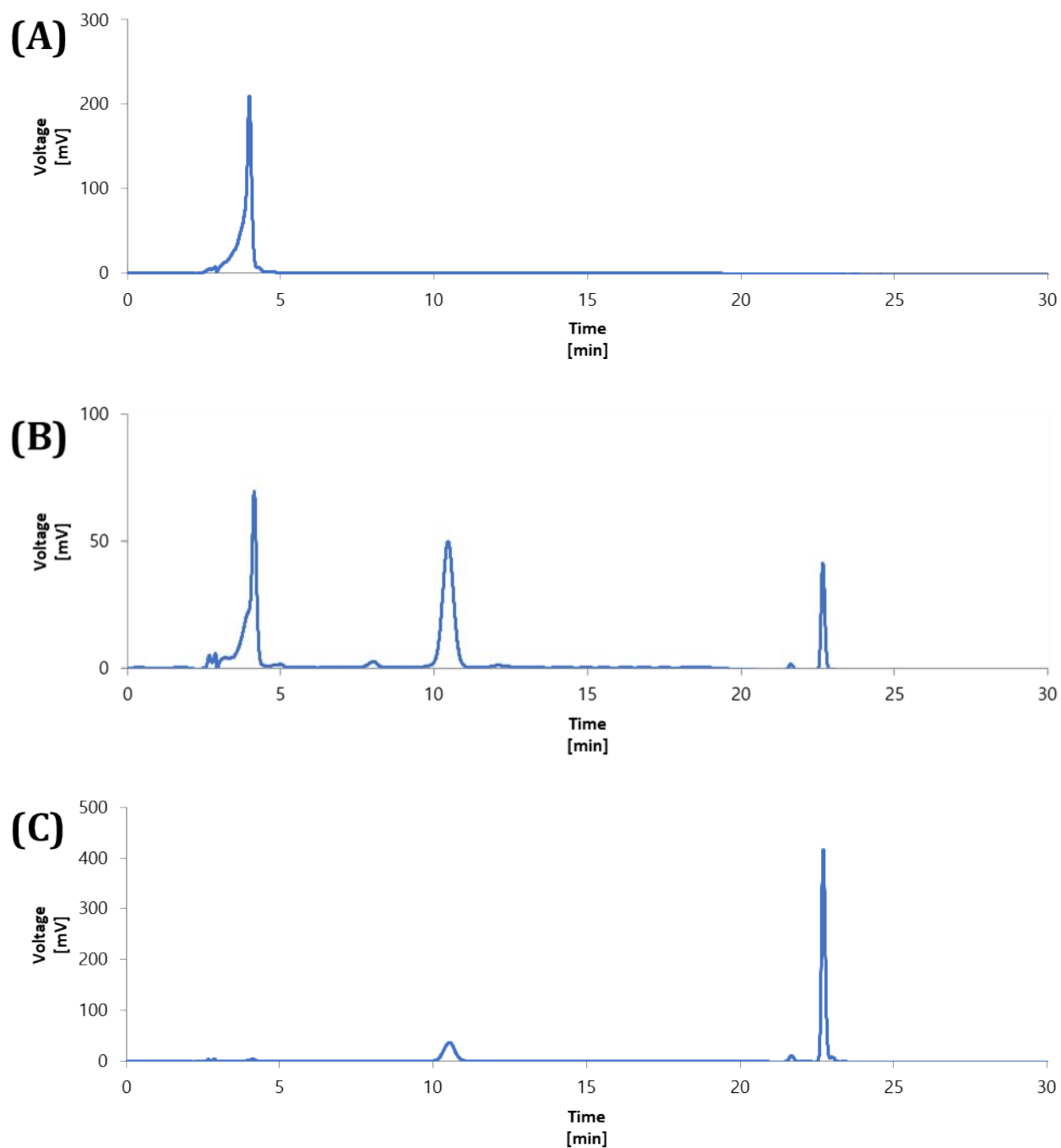
## Chemical Transformation of Astaxanthin from *Haematococcus pluvialis* Improves its Antioxidative and Anti-inflammatory Activities

**Sung Hyun Hwang<sup>1</sup>, Ji Min Kim<sup>1</sup>, Seokjoon Kim<sup>1</sup>, Min Jin Yoon<sup>2</sup>, Ki Soo Park<sup>1,\*</sup>**

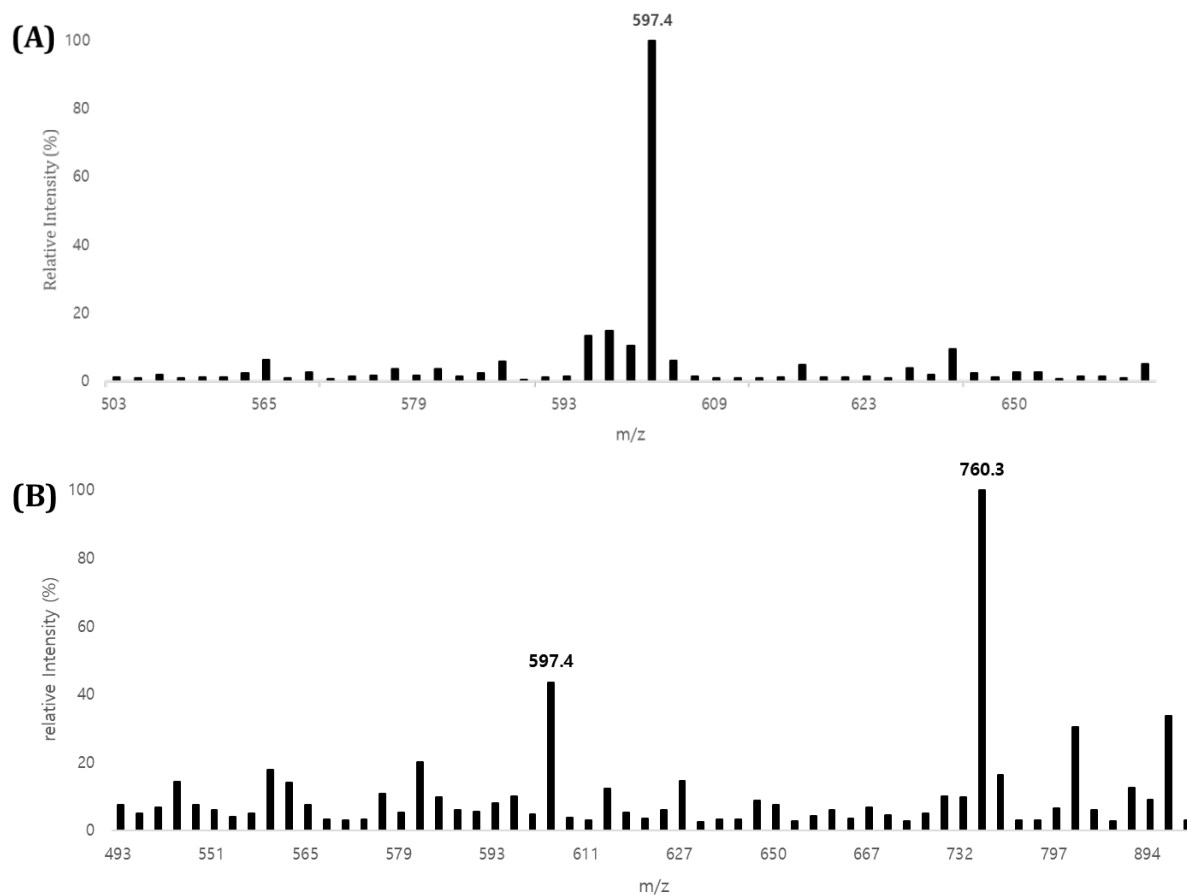
<sup>1</sup>Department of Biological Engineering, College of Engineering, Konkuk University, Seoul 05029, Republic of Korea.

<sup>2</sup>Natural Bio Tree, Seongnam-si, Gyeonggi 13449, Republic of Korea.

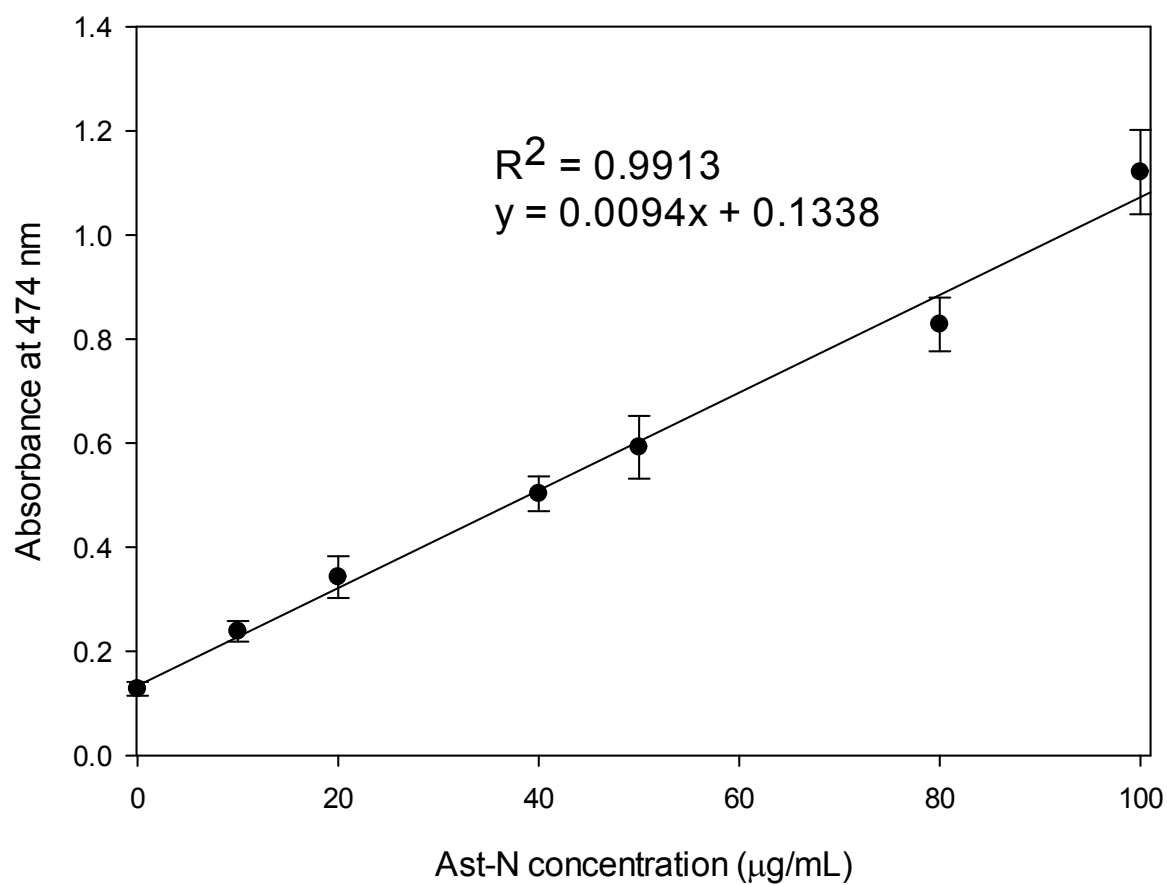
**\*Correspondence:** E-mail: [akdong486@konkuk.ac.kr](mailto:akdong486@konkuk.ac.kr) or [kskonkuk@gmail.com](mailto:kskonkuk@gmail.com); Tel. & Fax.: +82-2-450-3742



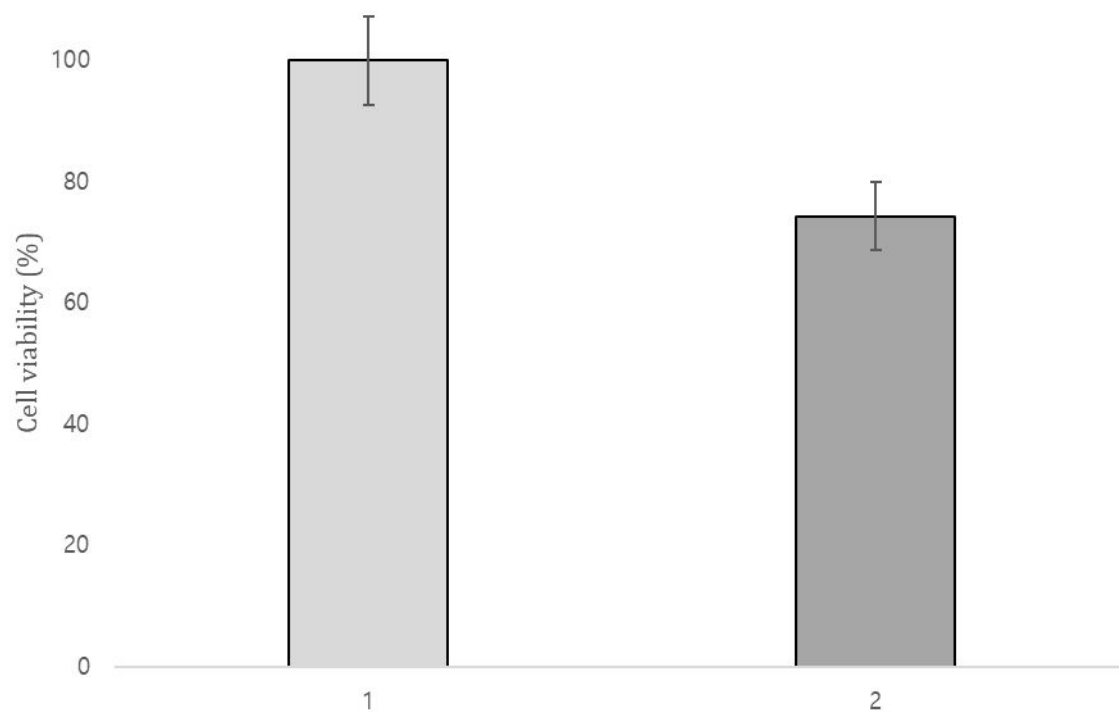
**Figure S1.** HPLC chromatograms of (A) synthetic Ast-N, (B) mixture of Ast-N, Ast-mE, and Ast-dE, and (C) Ast-dE. The synthetic Ast-N (A) was purchased from Sigma-Aldrich (SML0982), and the samples (B and C) were respectively prepared by esterification of synthetic Ast-N with the decanoic acids at different amounts. Specifically, the sample (B) was prepared with 6 times higher amount of decanoic acids than that of sample (C).



**Figure S2.** Mass spectra of (A) Ast-N in sample 2 and (B) Ast-N and Ast-mE in sample 3. LC-MS was performed on a Waters 2996 modular HPLC system coupled to a Q-TOF Ultima (UK) mass spectrometer. Mass spectra were acquired with a m/z 300-1,500 scan range. the significant ions were only found in a m/z 500 and 1,000 scan range. The m/z peak at 597.4 was designated as Ast-N in sample 2 and m/z peak at 597.4 and 760.3 are assigned as Ast-N and Ast-mE with C10 in sample 3, respectively.



**Figure S3.** Calibration curve obtained by measuring the absorbance of different concentrations of Ast-N as the analytical standard, at 474 nm. The results are presented as the mean  $\pm$  SD of three independent experiments.



**Figure S4.** Viability of Raw 264.7 cells exposed to acetone (5%), which was calculated through MTT assay. 1: without acetone, 2: with acetone (5%). The bars represent the standard deviation obtained in three independent experiments.