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## UPLC-C<sub>30</sub> advances support approach to probe carotenoid isomers in Cyanobacteria inhabiting thermal springs in Saudi Arabia

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۲ hermal springs in southwestern Saudi Arabia are dominated by Cyanobacteria. However, carotenoids in Cyanobacteria range from L simple carotenes to complex glycosylated xanthophyll. They are thermo-labial biomolecules that presumably are still functioning inside thermo-Cyanobacteria. Carotenoids are essential for photosynthesis and thylakoid membrane biogenesis in cyanobacteria. To analyze carotenoids in thermo-cyanobacteria, optimization strategy of both extraction and separation were fundamentals steps for extensive study of carotenoids and their isomers. Extraction from unicellular cyanobacterium Choorococcus sp. was easier compared to the filamentous Cyanobacteria (Phormedium sp. and Microcoleus sp.). UPLC-C18 fractionation yield poor fractions. However, fractionation significantly improved by employing C30 column that yield at least 25 fractions more than that realized by conventional C18. In Choorococcus sp. Zeaxanthin peak eluted by C18 was fractionated into six distinct peaks by C30 column. C18 column analysis of *Microcoleus* sp. carotenoids extract resolves the main carotenoids species (myxoxanthophyll, zeaxanthin and  $\beta$ -carotene). However, C30 chromatogram shows a total of 35 fractions in Microcoleus sp. carotenoid extract. Carotenoid isomers were abundant in all extracts analyzed by C30 column, zeaxanthin was major dominant species in both Choorococcus sp. and Microcoleus sp. and its isomers were evident in both species. High occurrence of carotenoids isomers in vivo is uncertain; however isomers may play a vital role in the life of thermo-cyanobacteria. Whether they are by-product of thermal deformations or native molecules formed by endogenous synthesis is yet to be resolved. Indeed, continuous optimization of UPLC-C<sub>30</sub> method will help trace carotenoid isomers that are informative structure-function relationships of carotenoids.

## **Biography**

Hatem E M Abdelwahab has completed his PhD from Arizona State University and Post-doctoral studies from School of Life Sciences and the Biodesgin Institute at Arizona State University, Department of Biological and Ecological Engineering at Oregon State University. He served in Seuz Canal University, King Abdulaziz University and Jeddah University as an Assistant Professor. He has published more than 7 papers in reputed journals and 25 abstracts and posters in international conferences and meetings.

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