

Study of carotenoid production by *marinobacter* sp. TBZ112 isolated from Urmia lake in north-western of Iran

D. Naziri¹, S. Hassanzadeh², M. Hamidi^{1*}, M. Hejazi³, H. Nazemyieh⁴, B. Maleki¹, M. Hejazi¹

¹Department of Pharmaceutical Biotechnology, Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran

²Department of Agricultural Biotechnology, Faculty of Agriculture, Zanjan University, Zanjan, Iran

³West and Northwest Agricultural Biotechnology Research Institute of Iran (ABRII)

⁴Department of Pharmacognosy, Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran

Background and Aims: Carotenoids are of great interest in many scientific disciplines because of their wide distribution, diverse functions and interesting properties. Halophilic bacteria are extremophile microorganisms that grow optimally in media containing salts and often are pigmented. Many of them contain high concentrations of carotenoids. The present study aimed to study potential of *Marinobacter* sp. TBZ112, isolated from Urmia Lake, in production of carotenoid compounds.

Methods: *Marinobacter* sp. TBZ112, an extremely halophilic bacterium, isolated from Urmia Lake were cultivated in culture media (MGM Agar & Marine Agar) and incubated at appropriate conditions. Then single colonies were cultivated in broth media. 16S rDNA sequence showed that the isolated bacterium belongs to *marinobacter* genus and represents a new type strain. Phenotypic characteristics of the bacterium were carried out using various bacteriological and biochemical reactions. After that the cells were collected and carotenoids were extracted with acetone. Qualitative carotenoid determination was carried out using spectrophotometric method, thin layer chromatography (TLC) and HPLC respectively.

Results: 16S rDNA sequence and phenotypic characteristics revealed that the isolated bacterium belongs to *Marinobacter* genus introducing a new type strain. According to the obtained results, highly produced carotenoid from *Marinobacter* sp. TBZ112 seems to be monodemethyl spirilloxanthin.

Conclusions: *Marinobacter* sp. TBZ112, isolated from Urmia Lake have high capacity in the production of carotenoids. This extremely halophilic bacterium could be considered as bacterial candidate for carotenoid production source for future studies.

Keywords: Carotenoid; Halophilic bacteria; Monodemethyl spirilloxanthin.