A salt lake extremophile, Paracoccus bogoriensis sp.nov., efficiently produces xanthophyll carotenoids

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Abstract

A Gram-negative obligate alkaliphilic bacterium (BOG6T) that secretes carotenoids was isolated from the outflow of Lake Bogoria hot spring located in the Kenyan Rift Valley. The bacterium is motile by means of a polar flagellum, and forms red colonies due to the production of xanthophyll carotenoid pigments. 16S rRNA gene sequence analysis showed this strain to cluster phylogenetically within the genus Paracoccus. Strain BOG6T is aerobic, positive for both catalase and oxidase, and non- methylotrophic. The major fatty acid of the isolate is C18: 1ωωωω7c. It accumulated polyhydroxybutyrate granules. Strain BOG6T gave astaxanthin yield of 0.4 mg/g of wet cells indicating a potential for application in commercial production of carotenoids. On the basis of its genotypic characteristics, fatty acid composition and physiological reaction profiles, it is proposed that the isolate may be assigned to the genus Paracoccus as Paracoccus bogoriensis sp. nov. The type strain is BOG6T (=DSM16578 =LMG22798). The GenBank 16S rDNA nucleotide sequence accession number is AJ580352.