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題名	Carotenoid accumulation in the eyespot apparatus required for phototaxis is independent of chloroplast development in Euglena gracilis
掲載雑誌	Plant Science https://doi.org/10.1016/j.plantsci.2020.110564
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概要	(Euglena gracilis) Plant Science (EgcrtB) carotenoid-less (cl) (cl1　cl3)　(cl4) (cl1　cl3) (　　C) Euglena gracilis exhibits photomovements in response to various light stimuli, such as phototactic and photophobic responses. Here, we isolated carotenoid-less (cl) strains of E. gracilis from cells silenced gene expression of phytoene synthase (EgcrtB). Unlike WT, the culture colors of cl1, cl3, and the non-photosynthetic mutant SM-ZK were orange, while that of cl4 was white. Electron microscope observations showed that SM-ZK, cl1, and cl3 had no developed chloroplast and formed a normal eyespot apparatus, similar to that of WT, but this was not the case for cl4. Carotenoids detected in WT were diadinoxanthin, neoxanthin, and β-carotene. However, the most abundant species of SM-ZK, cl1, and cl3 was zeaxanthin, and there was no diadinoxanthin or neoxanthin. Photomovement analysis showed that SM-ZK, cl1, and cl3 exhibited negative phototactic and photophobic responses, similar to those of WT, whereas cl4 lacked negative phototaxis. Taken together, the formation of the eyespot apparatus required for phototaxis is independent of chloroplast development in E. gracilis, suggesting that this property is different from other photosynthetic flagellates.
関連画像