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The Effect of Metal Compounds on the Protein Patterns of Plasma Membrane, Thylakoid, and Chloroplast Envelope in *Chlorella ellipsoidea*

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The levels of patterns of protein in plasma membrane, thylakoid, and chloroplast envelope isolated from *C. ellipsoidea* treated with $CdCl_2$ (12ppm), $ZnCl_2$ (50ppm), $HgCl_2$ (0.7ppm) during the cultivation were analyzed. In the plasma membrane, the various treatments were showed the aspect similiar to the control on the 3rd day and 5th day of cultivation, but the loss of 31-28KD band showed in the cadmium chloride and mercuric chloride treatment on the 7th day of cultivation. In the thylakoid envelope, in case of the cadmium chloride treatment, 18-14KD and 12KD were lost on the 3rd day of cultivation. On the 5th day and the 7th day of cultivation, 18-14KD and 31-21KD were lost completely, respectively. In the zinc chloride treatment, with the start of the loss of protein 12KD on the 3rd day of cultivation, and the loss of 18-14KD and 31-12KD was observed on the 5th day and 7th day of cultivation. The loss of band showed predominantly from the early stage of cultivation in the mercuric chloride treatment. In the cadmium chloride treatment, the loss of 25-18KD on the 3rd day of cultivation, 14-12KD on the 5th day cultivation, and 66KD on the 7th day of cultivation in the chloroplast were observed. The loss of 25-18KD and 14-12KD showed on the 5th day and the 7th day of cultivation at the zinc chloride treatment. In the mercuric chloride treatment, the band of 25-18KD and 14-12KD were lost on the 3rd day and 5th day of cultivation, respectively, and all of bands were lost on the 7th day of cultivation completely.

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The Effect of Surfactants on the Biosynthesis of the Galactolipid and the Fatty Acid Composition of *Chlorella ellipsoidea* Chloroplast and Thylakoid Envelope

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The biosynthesis of galactolipid and the composition of fatty acid in chloroplast and thylakoid envelope isolated from *C. ellipsoidea* treated with surfactants (linear alkylbenzene sulfonate (LAS 0.002%), α-olefin sulfonate (AOS 0.01%), sodium lauryl ether sulfate (SLES 0.08%)) were analyzed. The major fatty acid utilized for biosynthesis of MGDG in chloroplast envelope were palmitoleic acid(ave. 15.55%), oleic acid(ave. 15.09%) in control, linolenic acid(ave. 29.49%), linoleic acid(ave. 8.37%) in LAS treatment, linolenic acid(ave. 16.67%), oleic acid(ave. 14.56%) in AOS treatment, linolenic acid(ave. 13.05%), oleic acid(ave. 12.61%) in SLES treatment. The major fatty acids in chloroplast envelope DGDG were oleic acid(ave. 15.75%), linoleic acid(ave. 17.74%) in control, linolenic acid(ave. 37.94%), stearic acid(ave. 7.98%) in LAS treatment, oleic acid(ave. 17.14%), linolenic acid(ave. 16.57%) in AOS treatment, oleic acid(ave. 14.40%), linolenic acid(ave. 13.50%) in SLES treatment. The major fatty acid utilized for biosynthesis of MGDG in thylakoid envelope were linolenic acid(ave. 14.78%), oleic acid(ave. 12.90%) in control, oleic acid(ave. 14.52%), linolenic acid(ave. 12.29%) in LAS treatment, linolenic acid(ave. 21.67%), linoleic acid(ave. 12.24%) in AOS treatment, linolenic acid(ave. 13.67%), palmitoleic acid(ave. 12.40%) in SLES treatment. The major fatty acids in thylakoid envelope DGDG were linolenic acid(ave. 18.01%), oleic aicd(ave. 15.53%) in control, oleic acid(ave. 13.85%) in LAS treatment, linolenic acid(ave. 20.84%), linoleic acid(ave. 12.12%) in AOS treatment, palmitoleic acid(ae. 13.21%), oleic acid(ave. 13.23%) in SLES treatment.