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Differences in dynamic behavior of single diatom cells caused by changing wavelengths

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Highlights

- The speed of diatom cells decreased when the colored film is inserted.
- The number of moving cells in the Petri dish decreases when we insert the colored film.
- Speeds of diatom cells are decreased due to the coloured film in both Petri dish and microchamber.

Abstract

We investigate a motion of diatom cells stimulated by a halogen lamp irradiation. Diatom cells are single-celled organisms which have chloroplast. Chloroplast contains photosynthetic pigment which absorbs blue light (wave length of the light is 400 nm – 450 nm) and red one (650 nm – 700 nm). Light intensity of the halogen lamp is fixed about 500 lx during the experiment. We used colored films to cut the blue or red light and observed motion of diatom cells by using the optical microscope. We found that the speed of diatom cells decreases when the colored film is inserted, and it increases after ejecting the film. It is noted that the light intensity is constant during the experiment, which means that we change wave length of the irradiated light. Our results show that the average speed of diatom cells is influenced by not the light intensity but the wave length of the light.

Keywords: diatom; single-cell; microchamber; photosynthetic pigment; halogen lamp

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