

3 - 57 Effect of Irradiation of Carbon Ions Beam on Chlorophyll of *Selenastrumcapricornutum*

Wang Jie, Li Xin, Sun Yongliang, Liu Ruiyuan, Wang Jufang and Li Wenjian

Selenastrumcapricornutum is commonly used as a model organism of freshwater algae in standard toxicity tests (ISO 8692)^[1]. While, it seldom used in investigate mechanism of irradiation of which will perhaps be a significant role in biological effects of space radiation. This research aims to investigate the effect of irradiation of carbon ions beam on the one of important photosynthetic pigment- chlorophyll with different irradiation doses(20, 40, 60 Gy) and different cultivate time.

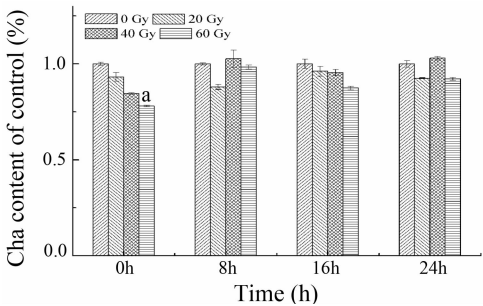


Fig. 1 Chlorophyll a content of different dose carbon ions beam irradiation on *Selenastrumcapricornutum*.

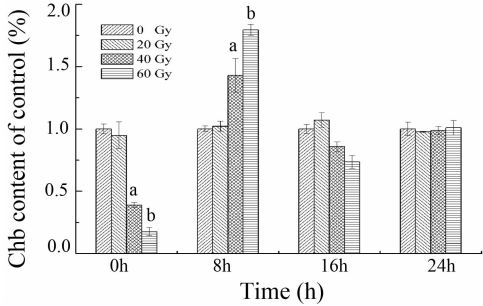


Fig. 2 Chlorophyll b content of different dose carbon ions beam irradiation on *Selenastrumcapricornutum*.

After irradiated by 80 MeV/u $^{12}\text{C}^{6+}$ of Heavy Ion Research Facility (HIRFL, Lanzhou, China), the content of chlorophyll measured by the hot-ethanol method at the time of 0, 8, 16, 24 h^[2]. According to the equation of chlorophyll, the content will be calculated^[3]. According to Fig. 1 (Significant difference between control and treatment groups are indicated by a, b, c ($p < 0.05$)), the content of chlorophyll a (Chla) injured severely irradiated by 60 Gy in 0 h, while other dose groups did not impact significantly. As cultivate time went, each dose group injured slightly or did not vary significantly, and in 24 h, basically went back to the level of control group. From Fig. 2, we could find that the content of chlorophyll b (Chlb) was impacted severely for the 40, 60 Gy dose groups, and then increased apparently in 8 h, finally went back to the level of control group gradually. While, it seemed that radiation had no essential effect on 20 Gy dose group during 24 h.

Therefore, we can conclude that the content of Chla and Chlb injured severely after irradiation immediately, and then they could recovery to the normal level in a period time.

References

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