

Biochemistry 2018: Chlorophyll acts as absorber for gamma ray to protect from cancer

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Abstract

Chlorophyll extracted from celery using 50% v/v water-methyl alcohol as a solvent. By this method the concentration of chlorophyll was 22.6% with yellowish-green color. This solution showed strongly absorption at 400-210 nm and maximum were at the end of ultra-violet region. This absorption appeared in water, methyl alcohol and acetone, but strongest absorption was in water. No emission spectra were detected in the ultra-violet and visible regions which mean that chlorophyll absorbs radiation and dissipate it as a heat. Several samples of the above solution were radiated by gamma ray from cesium-137 with energy of 0.7 MeV for different intervals (0.5, 1, 2, 4 and 24 hours). The color of the solution disappeared after two hours radiation while the pH decreases from 6.38 for un-radiated to radiated celery solution 4.17 after 24 hours with liberation of carbon dioxide which indicates destroying of chlorophyll but the absorption at 400-210 nm still exists which reflects the high stability of the group magnesium-four nitrogen atoms (tetrapyrrole) its energy about 3500 kJ mol⁻¹. The resulted carbon dioxide carries by hemoglobin to expel via lungs similar to that produces by biological activity of the body. Calculation showed that the dosage of two hours radiation in which color of the solution disappeared (Compton effect) was 5.6 kilogray (1 gray=1 Joule per 1 kg sample) absorbed by chlorophyll before color disappear is enough to kill 1120 people weight 75 kg each within 14 days when the whole bodies exposure at one time. The samples glass containers and their white plastic covers of the radiated samples for 4 and 24 hours changed their color to violet may be due to the rearrangement of their physical structures. Others interesting points will appear in the full article. Capsules used as carrier for the chlorophyll to take it by children. Result shows chlorophyll is very good protector from ultra-violate light for food (especially meat) and extend its storage time compared with untreated meat. This is done by covering coating meat with chlorophyll or packed in chlorophyllated bag. Also, aqueous chlorophyll solution shows a good ability to act as protector in nuclear shelter from gamma ray through sandwich panel.

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