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Characteristics of *in vitro* Cultured Chrysanthemum Organs that Irradiated with Proton Beam

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Objectives

Proton beam is physical mutagen. This study was conducted to investigate an effect of proton beam on organogenesis, morphological changes, and growth patterns of the irradiated plant organs (leaf segments, cuttings). Thus, we irradiated plant materials with proton beam as mutagen, and investigated organogenesis, growth response and phenotype of the irradiated plant organs.

Materials and Methods

1. Materials: *in vitro* cultured chrysanthemum (*Dendranthema grandiflorum*) organs
2. Methods: Beam source- proton beam (45 MeV/n, 5nA, KIRARMS, Korea)
Irradiation intensity- 0Gy to 100Gy
Medium- MS or MS medium containing 1.0mg/l BA and 0.1mg/l NAA
Flowcytometry- PA II

Results and Discussion

Some kinds of chrysanthemum organ (leaf disks/cuttings) were *in vitro* cultured and irradiated with proton beam. When the irradiated leaf segments were cultured on MS medium containing 1.0mg/l BA and 0.1mg/l NAA, shoot formation from the leaf segments and growth of the shoots were significantly inhibited by increasing the irradiation intensity from 2.5Gy to 10Gy. In the *in vitro* cultured cuttings, growth was gradually inhibited up to 20Gy but significantly inhibited over 30Gy. Somewhat difference of organogenesis and growth was observed by cultivars. Even the frequency showed low, plants with abnormal chlorophyll containing leaves were induced at 20Gy among the irradiated plantlets. Flowcytometric analysis by using the ion beam-irradiated plantlets was carried out.

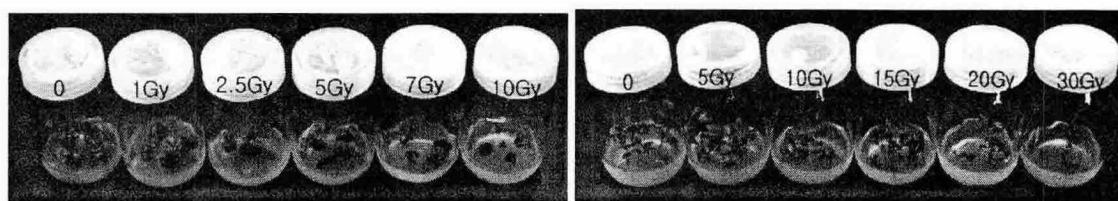


Figure 1. Profiles of proton beam irradiated chrysanthemum organs. left: leaf segments, right: cuttings