

Elicitor-Responsive Photon Emission From Plant Cells Changes in Process of Callus Propagation®

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All living organisms emit ultra weak-photon emission, so-called bio-photon, originating from biochemical reactions in cells. So far, we have tried to connect the condition of plants with emission levels of the bio-photon and found some changes. In this report, we show that the elicitor-responsive photon emission from callus changes widely during the callus propagation.

MATERIALS AND METHODS

Grape callus 'PC1137' and rice callus 'Kinmaze' were cultured in a 300-ml flask containing 100 ml of Gamborg's B5 modified medium and in a 100-ml flask containing 30 ml of UM medium, respectively. Callus was placed in petri dishes with culture medium with 1 mM potassium silicate (final concentration) for grape callus and filtrated PGPF culture solution for rice callus added as an elicitor. The bio-photon emission from callus was measured periodically using a photon counter (Hamamatsu photonics K.K.).

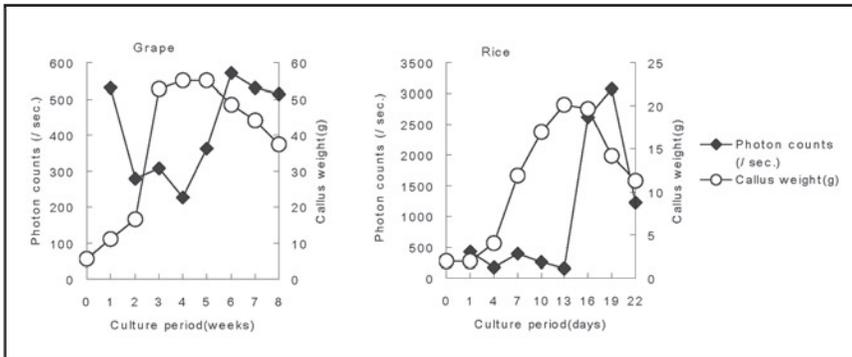


Figure 1. Relationship between callus production and elicitor-responsive photon emission in both grape and rice production.

RESULTS AND DISCUSSION

In grape callus, the elicitor-responsive photon emission was high in the primary stage of culture (Fig. 1). It was reduced as the culture period was prolonged during a logarithmic growth phase. On the other hand, the elicitor-responsive photon emission from rice callus was low in the primary stage and it slowly decreased in the logarithmic growth phase as in grape callus. For both grape and rice callus, it was observed that the elicitor-responsive photon emission enormously increased after callus propagation reached a plateau.

These results suggest that the elicitor-responsive photon emission from callus changes widely in the process of callus propagation and the bio-photon from callus may reflect qualitative changes of cells.