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[\[Full-text PDF \(894K\) \]](#) [\[References \]](#)**Temperature Response of Photosynthesis and Activities of Phosphoenolpyruvate Carboxylase and Ribulose 1, 5-bisphosphate Carboxylase in Greened Calli Induced from Iceplant, *Mesembryanthemum crystallinum* L., Leaves**

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Abstract:

Iceplant is a halophyte with two different photosynthetic modes of C_3 and crassulacean acid metabolism (CAM). Environmental stress, such as a high salinity condition, is known as a trigger for shifting the photosynthetic mode from C_3 to CAM in a plant. The application of 6-benzylaminopurine to cell culture medium was effective to induce green calli from leaves of C_3 and CAM plants. The photosynthesis of greened calli obtained from C_3 and CAM plant leaves showed low temperature adaptation and wide temperature adaptation, respectively. In the calli derived from the C_3 plant, the activity of ribulose 1, 5-bisphosphate carboxylase (RuBPCase) was higher than that of phosphoenolpyruvate carboxylase (PEPCase), while in the calli from the CAM plant, the activity of PEPCase was higher than that of RuBPCase. Thus, the greened calli showed the original levels of enzymatic activity in their donor plants. The activity of PEPCase in the greened calli obtained from the C_3 plant increased with the application of NaCl to the cell culture medium, but this effect was not detected on nongreened calli.

Keywords:

Crassulacean acid metabolism, Greened callus, *Mesembryanthemum crystallinum* L., Phosphoenolpyruvate carboxylase, Photosynthetic mode shift, Ribulose 1,5-bisphosphate carboxylase

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