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Purification and Characterization of a Novel Calcium-Binding Protein in *Dunaliella salina*.

고재홍*, 이순희
연세대학교 생물학과

Calcium has been reported as a second messenger in various cellular processes by a wide body of evidence. Fundamental to this second messenger system are the Ca^{2+} -binding proteins (CaBPs), which function as intracellular receptors for second messenger Ca^{2+} . Hence, a novel CaBP was purified in *D. salina*, unicellular green algae. The molecular weight of this CaBP is about 23 kD as estimated by SDS-PAGE and gel filtration, and its pI value was about 5.16. This CaBP is able to bind Ca^{2+} in the presence of an excess of MgCl_2 and KCl both in solution and after SDS-PAGE and electrotransfer to nitrocellulose membrane. Also, the CaBP exhibited Ca^{2+} -dependent changes in mobility, UV absorption and fluorescence intensity, indicating its Ca^{2+} -dependent conformational changes. In the SDS-PAGE, Ca^{2+} -bound form is more faster than Ca^{2+} -free form in migration. On the contrary, Ca^{2+} -bound form is more slower than Ca^{2+} -free form in Non-denaturing PAGE. Meanwhile, UV absorption and fluorescence intensity was somewhat decreased by binding of Ca^{2+} .

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Polyacetylenes in Hairy Roots of Balloon Flower (*Platycodon grandiflorum*)

안준철*, 고경민, 황성진, 황백, Koichiro Shimomura¹
전남대학교 자연과학대학 생물학과, ¹일본 쓰쿠바 약용작물연구소

Hairy roots of Balloon flower (*Platycodon grandiflorum* A. DC) were induced from the root tissues infected with *Agrobacterium rhizogenes* ATCC 15834. Growth and polyacetylene [lobetyol (1), lobetyolin (2) and lobetyolinin (3)] production of ten hairy root clones cultured in 1/4 Gamborg B5 (B5) liquid medium were determined. One selected hairy root clone (D6) grew well in hormone free-B5 liquid medium and showed maximum content of polyacetylenes at week 6 for 1 (0.375% dry wt) and at week 7 for 2 and 3 (3.030% and 0.206% dry wt, respectively) whose levels were much higher than those of the intact plant root (1: 0.019%, 2: 0.077% dry wt, 3 was not detected)

