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## Structures and Expression Patterns of Glutamate Receptor cDNA From Small Radish (*Raphanus sativus* L. var. *sativus*)

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Inotropic glutamate receptors (iGluRs) cDNA clone was isolated from seedling cDNA library of Small Radish (*Raphanus sativus* L. var. *sativus*) and its structure and expression patterns were investigated. The open reading frame of the *RsGluR* cDNA consists of 2841bp including 93bp of intron, and encodes a poly peptide containing 916 amino acids. Molecular weight of *RsGluR* deduced from amino acid sequence was about 102 kDa and pI(isoelectric point) value was 8.69. *RsGluR* protein is similar to those of the *A. thaliana* and animal iGluRs in that it contains the transmembrane domains (TM1 to TM4) and two putative extracellular ligand binding domains (GlnH1 and GlnH2). M3 domain showed 28% to 46.18%, 44% to 94% amino acid identity with those of the animal species, and the plant species, respectively. The M3 domain of *RsGluR* is more similar to that of AMPA/kainate(34 % to 46.18 %) than to that of NMDA subtype (28%) animal iGluRs. Genomic Southern hybridization revealed the presence of one or two copy gene. RT-PCR and Southern blot analysis showed that *RsGluR* gene are expressed in all organs of small radish, including cotyledon, hypocotyl, leaf and root. seedlings grown in the light with DNQX known as an antagonist of animal AMPA/kainate iGluRs showed reduced chlorophyll and anthocyanin contents and lower levels of *CABII* and *CHS* transcripts. No effect of DNQX, however, was observed in seedlings grown in the dark. These results suggests that *RsGluR* is also involved in light signal transduction pathway resulting in the regulation of the gene expression in small radish.

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Keywords: *Raphanus sativus* L. var. *sativus*, Inotropic glutamate receptor (iGluR), cDNA, glutamate, AMPA/Kainate, DNQX, Chlorophyll, Anthocyanin, *CABII*, *CHS*