(05-1-79)

Molecular characterization of rice nucleolar GTPase1, OsNGP1

Chakhan Im[1], Jaebok Heo[1], Youngsim Son[1] and Jeongdong Bahk[1]

Division of Applied Life Sciences, Graduate School of Gyeongsang National University, Jinju 660-701, Korea.

Ribosome maturation proceeds along a set of well ordered processing steps in nucleolus. For this process, some nucleolar GTP binding proteins are known to be required in eukaryotic cell. Here we described the molecular characterization of rice nucleolar GTPase1, OsNGP1, a yeast Nog2p homolog. OsNGP1 contains five conserved GTP-binding domains in the C-terminus. To confirm whether OsNGP1 is a functional GTPase, we at first performed the biochemical assay. GTP-binding and hydrolysis activities of OsNGP1 were increased when adding $MgSO_4$ and detergent CHAPS. And then, to assume function *in vivo*, Complementation analysis using the yeast *Nog2* null mutant cells was done, and revealed that an OsNGP1 can replace the function of yeast Nog2 that required for late 60S maturation steps. To examine the localization of OsNGP1 in plant cells, GFP-OsNGP1 was transformed into *Arabidopsis* protoplasts. When expressed transiently, GFP-OsNGP1 was colocalized with NLS-RFP, a nucleolus marker protein, indicating that GFP-OsNGP1 is localized to the nucleolus in plant cell. In addition we isolated a serine-threonine kinase (OsSTK) homolog as an interacting protein with OsNGP1 by using yeast two-hybrid screening. To investigate whether OsSTK can phosphorylate OsNGP1 protein *in vitro*, kinase assay was performed. As expected, OsNGP1 was phosphrylated. To define the phosphorylation site of OsNGP1 by OsSTK, various truncated proteins of OsNGP1 were tested. This assay confirmed that serine-209 of OsNGP1 is a phophorylation site.

[This work was supported by BK21 program at Gyeongsang National University]

* *Corresponding author* : Chakhan Im TEL: 055-751-5959 E-mail: stardom255@naver.com