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OsRab11 is Involved in Intracellular Trafficking of TGN to PM and PVC

Jae Bok Heo¹, Hee Sun Rho¹, Woo Young Bang¹, Chak Han Im¹,
Young Sim Son¹, In Sil Jeong¹ and Jeong Dong Bahk¹

¹Division of Applied Life Sciences, Graduate school of Gyeongsang National University,
Jinju 660-701, Korea

Members of the Rab family of small GTPases play important roles in membrane trafficking along the exocytic and endocytic pathways, and their function depends on their localization. In this study, we tried to demonstrate the critical roles of OsRab11 isolated from rice in intracellular trafficking by a protoplast-localization assay. We firstly constructed two mutants, a dominant negative form of OsRab11(S28N) which increased its affinity to GDP rather than that of the wild type, and a constitutively active form of OsRab11(Q73L) which increased rather its affinity to GTP. The GTPase activities of these mutants were disappeared by mutation. The GFP:OsRab11 has been localized to both the trans-Golgi network (TGN) and endosomes/prevacuolar compartments (PVCs) when this construct was transformed in *arabidopsis* protoplasts. We examined the role of OsRab11 on the intracellular trafficking by using the dominant negative mutant and a few localization markers. The dominant negative mutant, OsRab11(S28N), inhibited the trafficking of plasma membrane (PM) proteins, H⁺-ATPase:GFP and Ca²⁺-ATPase:GFP and vacuole proteins, AALP:GFP. Co-expression of a wild type OsRab11 with a mutant OsRab11(S28N) relieved the trafficking inhibition of these marker proteins to PM and vacuole. However, co-expression of *Arabidopsis* Rha1 homologous to Rab5 which plays a role in PVC to central vacuole trafficking with OsRab11 (S28N) did not. From these, we propose that OsRab11 may play a role in trafficking of TGN to PM and PVC *in vivo*. [This work was supported by the BK21 program at Gyeongsang National University]