

Cellular Translocation of Itm2C Protein in CHO and PC12 Cells

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Itm2c gene is a member of *Itm2* family and expressed with tightly association in embryonic and adult brain tissues. In NGF-treated PC12 cells, Itm2C-embedded vesicles translocate along the growing neurites and axon, suggesting Itm2C may play a role in synaptogenesis. To study further the translocation of Itm2C-Myc-embedded and Golgi vesicles to growing filopodia in non-neuronal, and neuritis and axon in neuronal cells, and whether there is similarity between non-neuronal and neuronal cells, We investigated the mechanism involved in Golgi vesicles translocation using established CHO cell line (CHO/Itm2c) and PC12 cells. Using *Itm2c-myc* transfected CHO (CI) cell line, Itm2C-Myc peptides were localized in Golgi vesicles as evidenced by colocalizing with CFP after transfection with pECFP-Golgi plasmid, a Golgi marker. In either staurosporine(STP)- or dbcAMP-induced growing filopodia, Itm2C-Myc peptides were found both in Golgi and along the growing filopodia and the translocation of Itm2C-Myc-embedded vesicles is related to cytoskeletal components, microtubules and actin filaments. Similar vesicle translocation was found in transiently expressed PC12 cells in the growing neuritis and axon under STP induction and mouse brain after *Itm2c-myc* injection. The results suggest that the newly cloned CI cell line containing *Itm2c-myc* should be useful for understanding the translocation of Golgi vesicles to active peripheral zone during filopodial growth and the translocation of the Itm2C-Myc-embedded vesicles resembles synaptic vesicles found in PC12 cells. Thus, it should provide basic information for the study of targeted vesicle translocation in neuronal cells in parallel with growing filopodia in CI cells.