

The growth and development process (synek et al.



The mutation of this complex impairs tethering and fusion of the vesicles that results in accumulation of vesicles inside cell. (Novick et al. 1980; Heider and Munson, 2012).

During cell division, cell plate formation is carried out by the accumulation of the vesicles at the site of cytokinesis (Seguí-Simarro et al. 2004) and their fusion by the exocyst complex (Žárský et al. 2013). Mutation of *exo 70A1* shows some defects in cell plate formation (Fendrych et al. 2010), inability in root growth, loss of apical dominance, impaired flower development and smaller organs which proves that they are important in growth and development process (Synek et al.

2006). There are different isoforms of the exocyst subunits, which regulate exocytosis related to biotic (Peňková et al. 2011) and abiotic stress (Lin et al. 2013; Žárský et al.

2013) and other functions such as membrane recycling, autophagy related vesicular transport (Žárský et al. 2013). *Sec3* are the primary subunit to connect with the target membrane (Finger et al. 1998), their mutants in yeast resulted in accumulation of the secretory vesicle in cytoplasm as they were unable to dock with the membrane (Finger and Novick, 1997). *Sec 3* mutants are reported with root hair growth defects that leads to various growth defects in plants (Wen et al. 2005). Mutation of *Sec 8* shows defective pollen germination and tube growth (Cole et al.

2005). The subunit *exo84* plays key role in formation of exocyst complex and targeting (Zhang et al. 2005). Study of *Exo 84* mutation in yeast indicates their role in post Golgi secretion process (Zhang et al. 2005). *Exo 84* homolog

exo84b mutation resulted vesicles accumulation in cytoplasm, cytokinesis defects, irregular phenotype with retarded growth and sterility (Fendrych et al. 2010). The accumulated vesicles in exo84 mutants contain compounds such as pectin and xyloglucan (Fendrych et al.

2010). Other subunits such as SEC6, SEC8, SEC15b and EXO70A1 are also detected in various stages of cell plate formation (Fendrych et al. 2010).

In plants mutation of Sec5, Sec6, Sec8, Sec15a resulted less pollen germination with reduced growth (Hala et al. 2008). During cytokinesis secretory vesicles are directed to the cell plate formation matrix where exocyst complex assist tethering and fusion (Fendrych et al. 2010). After fusion vesicles are elongated projecting dumbbell