

ABSTRACT

THESIS: Investigating the Presence of Porosome in the Rabbit B-lymphocyte-like 240E Cell Line

STUDENT: Mariam M. Jaddah

DEGREE: Masters of Science

COLLEGE: Physiology and Health Science

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Porosomes are anticipated to be the universal secretory machinery of the cell plasma membrane, where membrane-bound secretory vesicles transiently dock and fuse to eject their contents to the extracellular space during cell secretion. Studies over the last fifteen years have demonstrated the presence of porosomes in almost all secretory cells. Porosomes were first discovered at the apical plasma membrane in pancreatic acinar cells and are manifested as cup-shaped lipoprotein structures in the plasma membrane that possess a central plug. Specific membrane proteins called SNAREs work to establish the continuity between the secretory vesicle membrane and the membrane at the porosome base. B-lymphocytes have SNARE proteins, which are necessary in membrane fusion and this brings about the question as to if porosomes (fusion pores) are present in B-lymphocyte too. This study provides evidence that porosome structures exist in B-lymphocytes, which are responsible for antibody production and secretion during adaptive immunity. By using immunoisolation of porosomes from a rabbit B-lymphocyte (plasmacytoma-like) cell line, 240E, we were able to detect the presence of SNAP-23. In the present study, we provide evidence, using transmission electron microscopy that porosome structures exist in these plasmacytoma-like cells, the 240E cell line, suggesting a

mechanism of B-lymphocyte secretion similar to that of the exocrine pancreas and somewhat different from the classic view of exocytosis.