Endoplasmic reticulum-resident selenoproteins as regulators of calcium signaling and homeostasis.

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Abstract
The human selenoprotein family contains 25 members that share the common feature of containing the amino acid, selenocysteine (Sec). Seven selenoproteins are localized to the endoplasmic reticulum (ER) and exhibit different structural features contributing to a range of cellular functions. Some of these functions are either directly or indirectly related to calcium (Ca²⁺) flux or homeostasis. The presence of the unique Sec residue within these proteins allows some to exert oxidoreductase activity, while the function of the Sec in other ER selenoproteins remains unclear. Some functional insight has been achieved by identifying domains within the ER selenoproteins or through the identification of binding partners. For example, selenoproteins K and N (SELENOK AND SELENON) have been characterized through interactions detected with the inositol 1,4,5-triphosphate receptors (IP3Rs) and the SERCA2b pump, respectively. Others have been linked to chaperone functions related to ER stress or Ca²⁺ homeostasis. This review summarizes the details gathered to date regarding the ER-resident selenoproteins and their effect on Ca²⁺ regulated pathways and outcomes in cells.

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