



# Effect of rosuvastatin on high glucose-induced endoplasmic reticulum stress in human umbilical vein endothelial cells

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**ABSTRACT.** It is well established that endothelial injury plays an essential role in atherosclerotic plaque formation. Accumulating evidence has shown that high glucose levels may detrimentally affect cultured endothelial cells through endoplasmic reticulum (ER) stress. In this study, we investigated the effect of rosuvastatin on high glucose-induced ER stress in human umbilical vein endothelial cells (HUVECs). HUVECs treated with 30 mM glucose were used to simulate high-glucose conditions, and rosuvastatin concentrations ranging from 0.1 to 10 nM were used. Cell viability was analyzed by thiazolyl blue tetrazolium bromide assay, and apoptosis rate was measured using flow cytometry. Expression of GRP78, IRE1 $\alpha$ , XBP1s, and CHOP was quantified using western blot and real-time polymerase chain reaction. Compared to cells treated with high glucose alone, cell viability increased and apoptosis

rate decreased significantly in the rosuvastatin + high-glucose groups. Furthermore, GRP78, IRE1 $\alpha$ , XBP1s, and CHOP expression was downregulated as a result of rosuvastatin administration. These results suggest that rosuvastatin may protect HUVECs from injury induced by high glucose levels, through alleviation of ER stress.

**Key words:** Rosuvastatin; Endoplasmic reticulum stress; High glucose