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SECRETION OF VWF FROM ENDOTHELIAL CELL UNDER ALTERED GRAVITY

Abstract

Endothelial cells lined the inner of vessels are crucial to maintain the cardiovascular homeostasis. The vWF mainly secreted from endothelial cells is an important molecule to mediate the interaction between platelets and vessels and plays a key role at hemostatis and thrombosis. But it's not clear whether the vWF secretion is changed under altered gravity.

In this study, HUVEC were exposed to simulated microgravity for 4h or 24h and hypergravity(8G) for 0.5h or 1h. The mediums were collected and concentrated, then vWF was detected. After this, we detected the free calcium ion $[Ca^{2+}]_i$ in HUVEC which were exposed to simulated microgravity and hypeygravity, then we detected the vWF secretion after changing $[Ca^{2+}]_i$ in HUVEC.

After 24h simulated microgravity exposure, vWF secretion and $[Ca^{2+}]_i$ concentration were decreased, while vWF secretion recovered to the control's level when $[Ca^{2+}]_i$ was increased through a calcium carrier A23187. Meanwhile, vWF secretion and $[Ca^{2+}]_i$ concentration increased after 0.5h or 1h hypergravity loading. However vWF secretion decreased markedly when the calcium in medium was chelated by EGTA.

Our results indicate that vWF secretion from HUVEC is influenced by altered gravity, $[Ca^{2+}]_i$ participate in this regulating process.