



# Internalization and induction of antioxidant messages by microvesicles contribute to the antiapoptotic effects on human endothelial cells

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Résumé en anglais	<p>Microvesicles are plasma membrane-derived fragments released from various cell types during activation and/or apoptosis and possess the ability to deliver biological information between cells. Microvesicles generated from T lymphocytes undergoing activation and apoptosis bear the morphogen Sonic Hedgehog, and exert a beneficial potential effect on the cardiovascular system through their dual capacity to increase nitric oxide and reduce reactive oxygen species production. This study investigated the effect of microvesicles on the apoptosis of human umbilical vein endothelial cells triggered by actinomycin D. Microvesicles prevented apoptosis induced by actinomycin D by modulating reactive oxygen species production: during the early phase of apoptosis, microvesicles might act directly as reactive oxygen species scavengers, owing to their ability to carry active antioxidant enzymes, catalase, and isoforms of the superoxide dismutase. Furthermore, their effects were associated with the ability to increase the expression of manganese-superoxide dismutase in endothelial cells, through the internalization process. Interestingly, microvesicles bearing Sonic Hedgehog induced cytoprotection in endothelial cells through the activation of the Sonic Hedgehog pathway. These findings provide additional evidence that microvesicles from T lymphocytes exert their vasculoprotective effects by promoting internalization and induction of antioxidant messages to the endothelial monolayer.</p>

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