HIF-1α expression was measured by real time PCR and western blot, and miR126 levels were measured by real time PCR of mature microRNAs.

RESULTS: This study shows that senescent endothelial cells present a reduced tube formation and a delayed wound healing capacity. In addition, we showed that HIF-1α protein was abolished in a model of replicative senescence in endothelial cells, resulting also an abolishment in the senescent endothelial cells-released microvesicles. HIF-1α abolishment is due to a decreased HIF-1α mRNA levels. HIF-1α age-induced downregulation was associated with Hsp90 reduced expression. Furthermore, we observed that HIF-1α protein levels were restored in HIF-1α stabilizer-treated senescent endothelial cells. Additionally, miRNA126 levels were downregulated in senescent endothelial cells and microvesicles. Finally, we studied the relationship between HIF-1α and miRNA126 and the results demonstrated that HIF-1α inhibitor reduced the tube formation and wound healing closure whereas the miR126 levels remained unchanged.

CONCLUSIONS: The results demonstrate that the expression of HIF-1α and miRNA126 play an essential key role in the endothelial cell homeostasis and their protective and repairing functions are independent, suggesting as a potential therapeutic targets for age-related disorders associated with chronic kidney diseases.