circ_0004872

The proliferation, migration and dedifferentiation of vascular smooth muscle cell]]s (VSMCs) exert crucial roles in atherosclerosis (AS) progression.

The aim of a study of Fan et al. was to explore the influences of circular RNA 0004872 (circ_0004872) in platelet-derived growth factor-BB (PDGF-BB)-induced AS cell model and investigate the underlying mechanisms. Real-time polymerase chain reaction (RT-qPCR) was implemented for the expression detection of circ_0004872, mitogen-activated protein kinase 1 (MAPK1) messenger RNA (mRNA), microRNA-513a-5p (miR-513a-5p) and thioredoxin interacting protein (TXNIP). Cell proliferation was analyzed via Cell Counting Kit 8 (CCK8) assay. Cell migration was assessed via wound-healing assay and transwell migration assay. Western blot assay was used to measure the expression of alpha smooth muscle actin (α-SMA), osteopontin (OPN), calponin and TXNIP. Dual-luciferase reporter assay and RNA-pull down assay were used for confirmation of interaction between miR-513a-5p and circ_0004872 or TXNIP. Circ_0004872 expression was elevated in PDGF-BB-induced human aortic vascular smooth muscle cells (HA-VSMCs) and carotid plaque tissues. Circ_0004872 silencing alleviated PDGF-BB-induced proliferation, migration and dedifferentiation in HA-VSMCs. MiR-513a-5p bound to circ_0004872, and circ_0004872 knockdown-induced effects in PDGF-BB-treated HA-VSMCs were largely attenuated by the silencing of miR-513a-5p. MiR-513a-5p bound to the 3' untranslated region (3'UTR) of TXNIP, and miR-513a-5p overexpression-mediated effects were counteracted by the transfection of pcDNA-TXNIP in PDGF-BB-induced HA-VSMCs. TXNIP was modulated by circ_0004872/miR-513a-5p signaling cascade in HA-VSMCs. Circ_0004872 accelerated PDGF-BB-induced proliferation, migration and dedifferentiation in HA-VSMCs through enhancing TXNIP level via sponging miR-513a-5p [1].

1)
Fan K, Ruan X, Wang L, Lu W, Shi Q, Xu Y. Circ_0004872 promotes platelet-derived growth factor-BB-induced proliferation, migration and dedifferentiation in HA-VSMCs via miR-513a-5p/TXNIP axis. Vascul Pharmacol. 2021 Feb 13:106842. doi: 10.1016/j.vph.2021.106842. Epub ahead of print. PMID: 33592319.