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Severe acute pancreatitis-related miR-551b-5p increases intracellular calcium concentration but does not alter c-Kit expression in rat interstitial cells of Cajal in vitro

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Objective: To investigate the effect of severe acute pancreatitis (SAP)-related miR-551b-5p on c-Kit expression and distribution and intracellular concentration of calcium in rat interstitial cells of Cajal (ICCs) in vitro.

Methods: ICCs were isolated from young rats and cultured in vitro. Cultured ICCs were divided into five groups: normal control cells, cells transfected with miR-551b-5p mimic, cells transfected with miR-551b-5p inhibitor, and negative controls for miR-551b-5p mimic and miR-551b-5p inhibitor. After transfection, real-time PCR was used to detect the mRNA expression of miR-551b-5p and c-Kit. Western blot was used to determine the protein expression of c-Kit, and confocal microscopy combined with immunofluorescence and Fluo-3AM fluorescence were used to determine the localization of c-Kit and intracellular calcium concentration, respectively.

Results: Transfection with miR-551b-5p mimic or miR-551b-5p inhibitor resulted in the overexpression or downregulation of miR-551b-5p in ICCs, respectively. The overexpression or downregulation of miR-551b-5p had no significant impact on c-Kit mRNA and protein expression and localization in ICCs. The overexpression of miR-551b-5p significantly increased intracellular calcium concentration in ICCs, and the downregulation of miR-551b-5p significantly decreased intracellular calcium concentration.

Conclusion: MiR-551b-5p increases intracellular calcium concentration but does not alter c-Kit expression in rat ICCs, suggesting that miR-551b-5p functions in ICCs by regulating the intracellular calcium concentration downstream or independently of c-Kit signaling.

Biography

Pi Liu, associate professor, completed his master's degree from Medical College of Nanchang University in 1997. After graduation he has been working in the First Affiliated Hospital of Nanchang University until now. Now he has been engaged in the study of pancreatitis.

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