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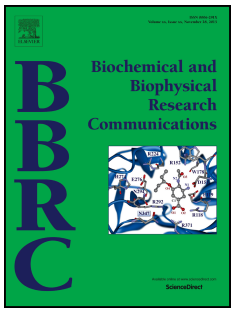

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The role of Pin1 protein in aging of human tendon stem/progenitor cells

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Abstract

Aging of tendon stem/progenitor cells (TSPCs) can lead to tissue degeneration and subsequent injury. However, the molecular mechanisms controlling TSPC aging are not completely understood. In the present study, we investigated the role of Pin1 in aging of human TSPCs. Pin1 mRNA and protein expression levels were significantly decreased during prolonged *in vitro* culture of human TSPCs. Furthermore, overexpression of Pin1 delayed the progression of cellular senescence, as confirmed by downregulation of senescence-associated β-galactosidase, increased telomerase activity and decreased levels of the senescence marker, $p16^{INK4A}$. Conversely, Pin1 siRNA transfection promoted senescence in TSPCs. In addition, miR-140-5p regulated Pin1 expression at the translational level via directly targeting its 3'UTR. Our results collectively demonstrate that Pin1 acts as an important regulator of TSPC aging.

Keywords:

Tendon stem/progenitor cells, aging, Pin1, miR-140-5p