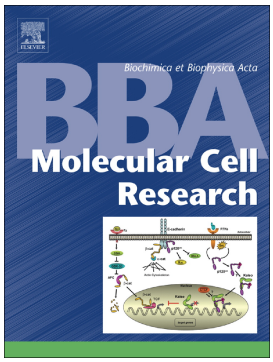

SIRT2 reduces actin polymerization and cell migration through deacetylation and degradation of HSP90

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Abstract

SIRT2, a member of the class III histone deacetylase family, has been identified as a tumor suppressor, which is associated with various cellular processes including metabolism and proliferation. However, the effects of SIRT2 on cancer cell migration caused by cytoskeletal rearrangement remain uncertain. Here we show that SIRT2 inhibits cell motility by suppressing actin polymerization. SIRT2 regulates actin dynamics through HSP90 destabilization and subsequent repression of LIM kinase (LIMK) 1/cofilin pathway. SIRT2 directly interacts with HSP90 and regulates its acetylation and ubiquitination. In addition, the deacetylase activity of SIRT2 is required for the regulation of actin polymerization and the ubiquitin-mediated proteasomal degradation of HSP90 induced by SIRT2.

Highlights

- SIRT2 deacetylates HSP90.
- SIRT2 inhibits HSP90/LIMK1/cofilin pathway.
- SIRT2 reduces actin polymerization and cell migration.