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Resveratrol suppresses inflammatory responses in endometrial stromal cells derived from endometriosis: a possible role of the sirtuin 1 pathway.

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Abstract

AIM: Endometriosis is a chronic inflammatory disease. Sirtuin 1 (SIRT1) plays a role in regulation of inflammation. The role of SIRT1 in endometriosis remains unknown. We here addressed the anti-inflammatory effects of SIRT1 on endometriosis.

METHODS: The expression of SIRT1 in human ovarian endometriomas and eutopic endometria were examined using immunohistochemistry and reverse transcription polymerase chain reaction (RT-PCR). Endometriotic stromal cells (ESC) obtained from endometriomas were exposed to either resveratrol or sirtinol, an activator or inhibitor of sirtuins, respectively, and tumor necrosis factor (TNF)- α -induced interleukin (IL)-8 release from the ESC was assessed at mRNA and protein levels.

RESULTS: Both immunohistochemistry and RT-PCR demonstrated that SIRT1 was expressed in ESC and normal endometrial stromal cells. Resveratrol suppressed TNF- α -induced IL-8 release from the ESC in a dose-dependent manner while sirtinol increased IL-8 release.

CONCLUSION: These opposing effects of SIRT1-related agents suggest that IL-8 release from the ESC is modulated through the SIRT1 pathway. Resveratrol may have the potential to ameliorate local inflammation in endometriomas.

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KEYWORDS: endometriosis; inflammation; interleukin-8; resveratrol; sirtinol; tumor necrosis factor- α

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