

Abstract

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Title: Effect of Methotrexate on Mature Male Rats Spermatogonial Stem Cells Self-renewal: Immunohistochemical Evidence

Author: Sirvan Taherian

Methotrexate (MTX) as a folic acid antagonist is extensively used in the treatment of a wide range of malignant and non-malignant disorders. This study was planned to unveil the immunohistochemical (IHC) effect of MTX on testicular spermatogonial stem cells self-renewal in mature male rats. Eighteen mature male *Wistar* rats were categorized into three equal groups including untreated control, sham (0.50 mL normal saline; orally [PO], three times a week [TIW]) and MTX (0.30 mg kg⁻¹; PO, TIW). All animals were euthanized after 35 days, and GDNF, gfr α 1 and c-RET levels in testicular tissue were analyzed through IHC analyses. Oral administration of MTX led to significant decline in GDNF, gfr α 1 and c-RET levels in rats' testicular tissue compared to the control and sham groups. As a result, MTX can disrupt the spermatogonial stem cells self-renewal and reduce content of the sources of spermatogenesis proliferative pool in mature rats' testicular tissue.

Keywords: Immunohistochemistry, Methotrexate, Rat, Spermatogonial Stem Cells