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RESEARCH ARTICLE

Electron micrograph studies on the effects of fluoxetine in depression-induced adult female rat ovaries

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Abstract

Background: Fluoxetine is a common drug in the treatment of major depressive disorders. However, its effects on the ovarian tissues are less explored. The objective of this study, therefore, is to examine the ultrastructural changes in the ovaries of depressed rats undergoing treatment with fluoxetine by electron micrograph (EM) analysis. Biochemical assays will indicate the functional aspects of the ovaries. **Methods/Statistical analysis:** The female Wistar rats selected for the study were given doses of reserpine drug to induce depression. Following this, treatment with fluoxetine at 10mg/kg and 20mg/kg was given. The blood samples were collected by retro-orbital method and used for the biochemical assays. Further, the analysis of the data was done by one-way ANOVA. The animals were sacrificed, ovaries isolated and processed for electron microscopy. The EM was observed and interpreted. **Findings:** EM studies on the ovarian tissues of depression-induced female rats undergoing treatment with 20mg/kg fluoxetine show the presence of an inconspicuous nucleus, several hydrated mitochondria, glycogen granules, fibroid encompassing the ovarian follicle and heavy invasion of stereo cilia. The biochemical assays also indicate a highly significant decrease in the ovarian hormones in this group at P=0.05(5%). **Applications:** The results are indicative of the detrimental effects of fluoxetine at 20mg/kg on the rat ovaries. Fluoxetine therapy for the treatment of depression in females should be in consideration with its influence on ovaries and ovarian hormones.

Keywords: Fluoxetine; electron micrographs; rat ovary

1 Introduction

Fluoxetine, approved for the treatment of depression, is a highly effective Selective Serotonin Reuptake Inhibitor (SSRI) in vitro and in vivo[(1)]. In clinical trials of antidepressants, the placebo effects with fluoxetine were found to be high in the range of 30% for subjects diagnosed with major depression[(2)]. In addition to the less aversive side effects and comparable efficacy, SSRIs in particular fluoxetine, has a wider therapeutic index[(3–6)]. The most benefits from fluoxetine tend to occur in people who have moderately severe illness[(5)].