ORIGINAL ARTICLE

Vitamin E' Effects on Endometrium of Adult Female Wistar Rats Treated With Fluoxetine

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ABSTRACT

Background: The antioxidant properties of vitamin E are well established fact and used widely to treat fertility issues. Flouxetine hydrochrolride comes from SSRI group of antidepressant having probable role in causing oxidative stress in reproductive organs.
Aim: To observe the effect of vitamin E on endometrium of rats when treated with fluoxetine
Methods: 30 female rats from wistar strain ranging between 8-12 weeks of age were divided randomly into control group A, experimental group B and protective group C administered distilled water, flouxetine (80 mg/kg) alone and vitamin E (250 mg/kg) along with 80 mg/kg of fluoxetine repectively for 15 days through oral route. Microscopic examination was carried out on 15th day. Quantitave data was analyzed by applying Mean±SD and One-way ANOVA and a P value ≤ 0.05 was considered to be significant.
Results: Uterine endometrium was obsereved to be signigicantly increased in thickness(P value=0.001*) in group B (treated with fluoxetine alone). However in group C which is treated with vitamin E along with fluoxetine showed normal uterine endometrial thickness as control group A.
Conclusion: The co-administration of vitamin E along with fluoxetine protects the uterine endometrium from oxidative changes caused by fluoxetine by virtue of its antioxidant properties.
Keywords: Wister rate, endometrium, fluoxetine

INTRODUCTION

Several vitamins are now being used to treat multiple medical conditions. Vitamin E is one of such vitamins which are currently under investigation, for its vast use in ameliorating negative effects of other drugs. Vitamin E is known for its antioxidant property owing to its effect on Reactive Oxygen Species (ROS) production. The level of ROS in blood and tissues is proportional to oxidative stress in body, which is lowered by vitamin E usage.

Fluoxetine hydrochloride is a widely prescribed antidepressant of Selective Serotinin Reuptake Inhibitor (SSRI) class. This widely prescribed antidepressant has been observed to cause undesired effects on different organs of body like lungs, heart, liver, endocrine glands and reproductive organs (Hajizada et al., 2016). Several researchers have reported that fluoxetine induces oxidative stress which is indicated by an increase in ROS and other free radicals (Jalili et al., 2014; Savaskan et al., 2007). Jalili et al., 2014 and Brambilla et al., 2005 observed that fluoxetine causes oxidative stress which negative implications on female reproductive system.

There has been no research done on fluoxetine induced negative effects on rats' endometrium, therefore present study focuses on potential effect of vitamin E on rat's endometrium upon treatement with fluoxetine.

MATERIAL AND METHODS

8-12 weeks old thirty female rats of wistar strain origon were selected for present study. Three groups were designated name as control, experimental and protective (A, B, and C repectively) with random selection of rats. Group wise caged animals were raised optimum temperature ranging 23±2ºC and humidity ranging between 55± 5%. Rats were given tap water and chow diet and kept in 12 hour each of light and dark cycle.

Group A animals were given distilled water by orally for 15 days and labeled as control group. By oral route 80 mg/ kg of fluoxetine was given to group B animals for 15 days. Animals of group C were administered 250 mg/kg of vitamin e along with 80 mg/kg of fluoxetine also by mouth. Fluoxetine was dissolved daily in distilled water and vitamin E diluted in olive oil (Fariha, 2008).

Dosage of vitamin E and fluoxetine was taken from studies done by Geeta et al. 2009 and Hai-Ping et al., 2012. Animals were sacrificed on 15th day after completion of experiment after anesthetizing with ether. Uterus was identified and dissected out in aseptic measures. For routine histological processing uterine horns of rats were first thoroughly washed with normal saline and afterwards buffered formalin is used to fix them for 48 hours. Later on they were processed in automatic processor; 5µm paraffin sections were cut and stained with routinr histologicalstains like heamatoxylin and eosin for light microscopy.

Microscopic examination: Sections of uterine tissue were observed under light microscope for thickness of endometrium, using ocular micrometer. The data was analyzed on computer using SPSS version21.0. Quantitative variable, i.e., endometrial thickness was analyzed by using Mean±SD and One-way ANOVA (Analysis of Variance). A p-value ≤ 0.05 was opted as statistically significant value.

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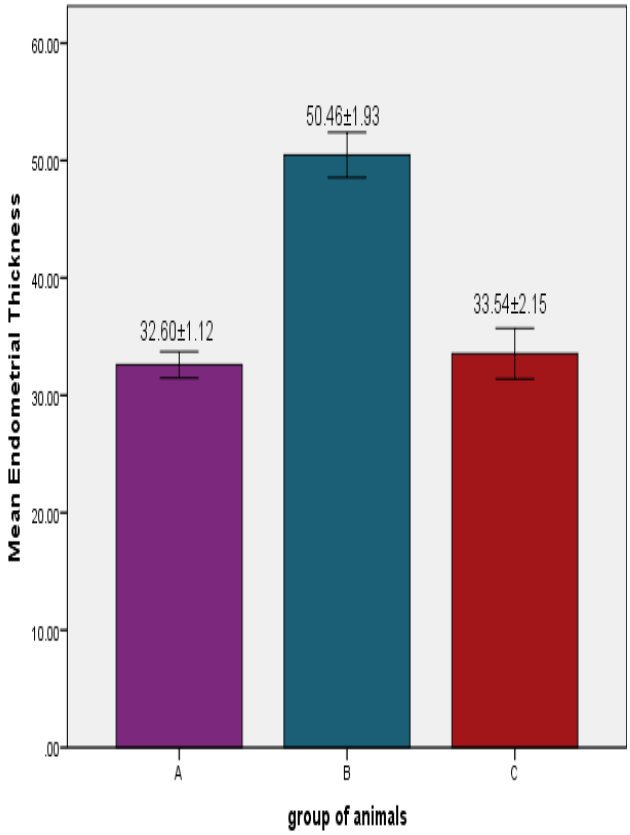
RESULTS

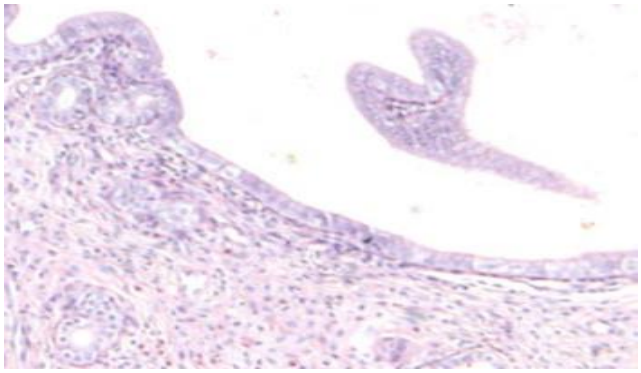
The mean endometrial thickness (µm) of animals from group A, B, and C were 32.60±1.12, 50.46±1.93, 33.54±2.15 respectively (p-value = 0.0001*). Following table showing mean endometrial thickness Mean±SD of female rats on 15th day.

Parameters	Endometrial thickness(µm)
Group A	32.60± 1.12
Group B	50.46± 1.93
Group C	33.54± 2.15
P value	0.0001*

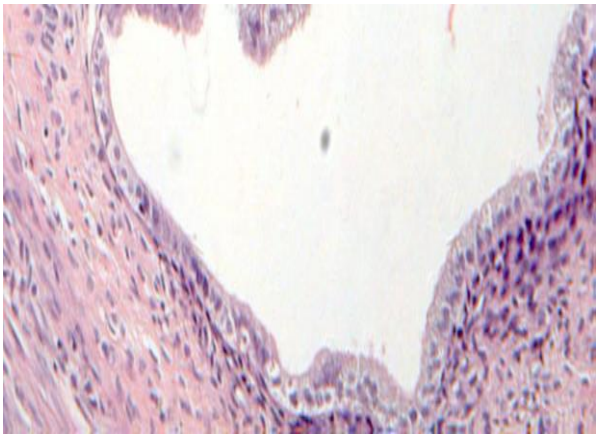
* p-value ≤ 0.05 is considered significant.



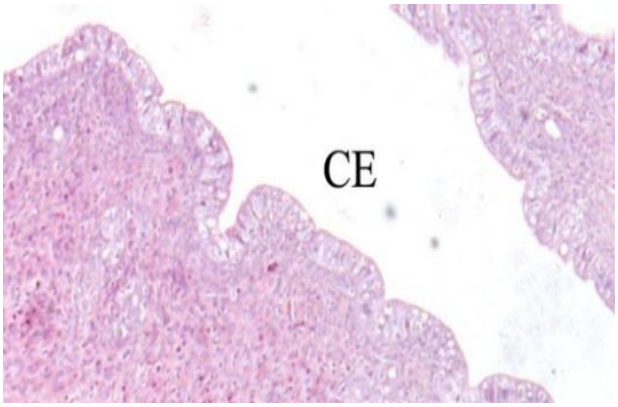
Histological micrographs showing normal thickness of uterine endometrium in rats when only given distilled water (groupA).



Histological micrographs taken from group B showing increased thickness of uterine endometrium when given 80mg/kg of fluoxetine.



Histological micrograph taken from group C showing normal thickness of uterine endometrium, when given vitamin E along with fluoxetine.



DISCUSSION

The results from animals of group B showed that there is increase in uterine endometrial thickness, when fluoxetine was given alone to such rats. The female reproductive organs and hormonal balance have a delicate relationship. Study done by Savaskan et al., 2007 supportrs present study by giving observation that fluoxetine induces oxidative stress and attributed this increase for histological effects in reproductive organs. Jan et al., 2008 reported derangement of reproductive hormone in rats treated with fluoxetine. High levels of prolactin have been observed to cause changes in ultra-structure of uterus (Mori et al., 1999). Fluoxetine have been seen to cause increase in thickness of uterine endometrium (Sengupta at al., 2013). Fluoxetine use and hyperprolactinemia has been observed by Ficicioglu et al. (1995).

The animals of group C which were treated with fluoxtine along with vitamin E showed normal thickness of uterine endometrium when compared with results from animals from control group A. Yin et al., 2012 was also of the opinion that with vitamin E use, reversal in the hormonal changes can be achieved. Findings from current study stipulate that the vitamin E has potential to protect

reproductive organs from oxidative stress which is supported by the study done by Jalili et al. 2014.

CONCLUSION

It can be inferred from current research that vitamin E brings uterine endometrium towards normal structure which was affected by the oxidative stress produced by fluoxetine.

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