

To Study the effects of Citalopram and Escitalopram on blood levels of FSH and Testosterone in Female Albino Rats

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ABSTRACT

Aim: To compare the effects of different doses of citalopram and Escitalopram i.e. 10mg and 40 mg on blood levels of testosterone and FSH female albino rats.

Methodology: Fifty female albino rats were selected and were divided into five groups. Group A was control group and B, C, D, E were with different doses of medicines. Rats were given 10mg and 40 mg of citalopram and Escitalopram. Group A (Control group) with distilled water orally. Total duration was 28 days. Quantitative assay of FSH and testosterone were performed by ELISA method.

Results: When comparing with controls, non significant changes were observed in low and high dose groups. So the Citalopram and Escitalopram have little effect on testosterone and follicle stimulating hormone.

Conclusion: Citalopram and Escitalopram have non-significant effect on serum testosterone and follicle stimulating hormones.

Keywords: Testosterone, FSH, Depression.

INTRODUCTION

Different types of conditions are associated with serotonin e.g. anxiety, obsessive-compulsive disorders and suicidal tendencies. Serotonin synthesis is regulated by tryptophan serotonergic terminals¹. Only 2% of receptors are of serotonin type and are present in CNS and rest of serotonin receptors i.e. 95% are seen in peripheral nervous system^{2,3}. It is seen that inhibition of peripheral serotonin receptors may be the cause of sexual function abnormalities³. Off-label serotonin inhibitors are also used for treatment of certain diseases like migraine, chronic fatigue syndrome, premature ejaculation, post-menopausal flashes and irritable bowel syndrome (IBS)⁴. They are regularly used for different types of psychological conditions because of their low side effects⁵. Most important toxic effect of antidepressants drugs is sexual functional abnormality i.e., 25-73%⁶. The sexual toxicity is considered to be non-serious abnormality in one of the study⁷. The aim of this study is to compare the effects of different doses of citalopram and Escitalopram i.e., 10mg and 40 mg on blood levels of testosterone and FSH female albino rats.

METHODOLOGY

An experimental study performed in Biochemistry Department, Khyber Medical College, Peshawar. The approval of the study was taken from ethical and institutional review boards. Female albino rats of 50 in number were selected. The duration of study was 28 days and were divided into Groups A (Control), B, C, D and E. Group A was given distilled water only while other four groups were given Escitalopram or Citalopram in drinking water. Group B and C were of Citalopram 10 mg and 40mg and Group D and E were of Escitalopram 10 mg and 40mg. Three blood samples were taken on zero day,

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14th day and 28th day. Serum testosterone and FSH levels were determined by quantitative ELISA method on Cobase 411 analyzer.

RESULTS

The detail is given in tables 1, 2, 3, 4

Table 1: Citalopram and blood testosterone level

Groups	Testosterone		
	Zero day	14 days	28 days
Group A (control)	2.42± 0.08	2.39± 0.22	2.01± 0.87
Group B	2.45± 0.08	2.31± 0.07	2.23± 0.07
Group C	2.15± 0.14	2.17± 0.09	2.17± 0.08

Statistical analysis: A vs B = p>0.05(NS)

A vs C = p>0.05(NS), B vs C = p>0.05(NS),

Group A=Control group, Group B=Citalopram 10mg dose,

Group C= Citalopram 40mg dose

Table 2: Escitalopram and blood testosterone level

Groups	Testosterone		
	Zero day	14 days	28 days
Group A (control)	2.15± 0.58	2.09± 0.45	2.23± 0.52
Group D	2.34± 0.30	2.27± 0.39	2.33± 0.12
Group E	2.53± 0.24	2.24± 0.24	2.30± 0.07

Statistical analysis: A vs D = p>0.05(Non significant)

A vs E = p>0.05(NS), D vs E = p>0.05(NS),

Group A=Control group, Group D=Escitalopram 10mg dose

Group E= Escitalopram 40mg dose

Table 3: Citalopram and blood FSH levels

Groups	FSH levels		
	Zero day	14 days	28 days
Group A (control)	2.76± 0.13	2.25± 0.06	2.31± 0.11
Group B	2.84± 0.09	2.14± 0.07	2.12± 0.09
Group C	2.51± 0.11	2.15± 0.13	2.06± 0.11

Statistical analysis: A vs B = p>0.05(Non significant)

A vs C = p>0.05(NS), B vs C = p>0.05(NS)

Group A=Control group, Group B=Citalopram 10mg doses

Group C= Citalopram 40mg dose

Table 4:Escitalopram and blood FSH levels

Groups	FSH levels		
	Zero day	14 days	28 days
Group A (control)	2.45± 0.33	1.98± 0.41	2.18± 0.33
Group D	2.55± 0.40	1.97± 0.46	2.23± 0.09
Group E	2.53± 0.37	2.07± 0.45	2.02± 0.11

Statistical analysis: A vs D = $p > 0.05$ (Non significant)

A vs E = $p > 0.05$ (NS), D vs E = $p > 0.05$ (NS)

Group A=Control group, Group D=Escitalopram 10mg dose

Group E= Escitalopram 40mg dose

DISCUSSION

In this study, 10mg and 40mg of citalopram and Escitalopram were given to female albino rats. Comparison of these groups with control group showed non significant difference on blood testosterone and FSH levels in female albino rats. Mennigen J.A et al studied in their research that neuroendocrine system is significantly affected by serotonin inhibitors.⁸ Another study done on goldfish observed that there is significantly decreased levels of blood testosterone and FSH levels when exposed to serotonin inhibitors.⁹

In our study, insignificant results are observed regarding blood levels of testosterone and FSH in groups B, C, D and E when comparing with control group A of female albino rats. Our results are consistent with the study of Ou JJ et al²⁴ performed in China by using Citalopram or Escitalopram 10 mg and 40 mg for 06 weeks and the results showed statistically insignificant difference and showed the safety and effectiveness of citalopram.¹⁰ In another study, overdose of Citalopram and Escitalopram were seen and escitalopram seemed to be safer as compared to citalopram. The results of citalopram overdose were serious as compared to escitalopram.¹¹ Other study suggested that Escitalopram is well tolerated, more beneficial and safer as compared to Citalopram.¹²

CONCLUSION

In comparison with control groups, there was non significant difference observed in hormonal levels i.e. testosterone and FSH levels in both low and high dose treated groups i.e. B, C, D, E.

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