

The effects of cigarette and waterpipe smoke on serum levels of LH, FSH, estradiol and progesterone in female rats

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Background

Studies have shown that there is an association between the smoking and serum levels of sex steroid hormones. This study aimed to compare the effects of cigarette and waterpipe smoke on serum levels of LH, FSH, estradiol and progesterone in female rats.

Methods

In this laboratory-scale experimental study, female Wistar rats were randomly divided into the control, cigarette, and waterpipe smoke receiving groups (10 rats in each group). Animals were exposed to cigarette or waterpipe smoke once a day for 100 minutes. After 6 weeks, blood samples were collected and following the serum collection, levels of LH, FSH, estradiol and progesterone were measured using the radioimmunoassay method.

Results

The serum levels of LH or FSH did not significantly change in cigarette or waterpipe smoke receiving rats compared with the control group. However, serum levels of estradiol and progesterone in rats exposed to cigarette smoke as well as serum estradiol level in rats exposed to waterpipe smoke were significantly decreased compared with the control group ($P < 0.001$).

Conclusion

It seems that exposure to cigarette smoke has a higher inhibitory effect than waterpipe smoke on female reproductive system and unlike waterpipe smoke, which only results in decreased serum progesterone levels, cigarette smoke results in decreased levels of both estradiol and progesterone.