

CHAPTER VI

CONCLUSION

The objective of this thesis is to study the effects of estrogen on the anxiety-liked behaviors involving serotonergic system in female rats. Animals were divided into three groups including Ovx+E₂, Ovx, and Pro groups. The anxiety-liked behaviors were measured by the ETM, an animal model evaluating two types of anxiety (i.e. PD and GAD) in the same animal. The same rat performed two tasks, namely inhibitory avoidance of the elevated open arms, representing condition anxiety which referred to GAD and one-way escape from one of the open arms, representative of unconditioned fear which referred to PD. Moreover, the changes in serotonergic system were also evaluated using HPLC technique for measuring 5-HT and its metabolite levels and Western blotting for measuring TPH and SERT protein levels. Finally, the 5-HT_{2A/2C} receptor antagonist was also used to study the 5-HT postsynaptic receptor function in anxiety-liked behaviors of female rats.

The conclusions drawn from results of this study are as follow:

1. The ETM results showed that Ovx+E₂ rats impaired inhibitory avoidance representing low levels of GAD, while Pro rats impaired one-way escape representing low levels of PD.

2. The open field data also showed that Ovx+E₂ rats have lower levels of anxiety than other two groups, and locomotor was not affected.

3. There are significantly changed in serotonergic system in these three groups of rats shown in HPLC and Western blot data.

- 3.1 Hippocampus and nucleus accumbens of Ovx+E₂ rats significantly increased in 5-HT turnover rate representing by 5-HIAA/5-HT ratio.

- 3.2. Results of TPH and SERT protein levels in which Ovx+E₂ and Pro rats have low levels of TPH protein as compared with Ovx rats while SERT protein levels were not affected.

4. Estrogen involved 5-HT_{2A} and 5-HT_{2C} receptor to control anxiety in both Ovx+E₂ and Pro rats, but the results have not yet been elucidated.

The present results suggested an anti-GAD in Ovx+E₂ rats and anti-PD in Pro rats. The differences in serotonergic responses from estrogen in these two groups may have implications of the complex regulation of anxiety by estrogen.