Blocking aromatization facilitates sexual behavior in ovariectomized rats treated with estradiol and testosterone

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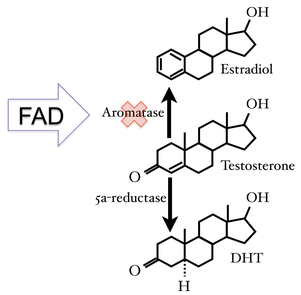
ABSTRACT

Women experience a natural decline in endogenous hormones with age. Administration of testosterone in combination with estrogen has proven to be an effective treatment in the reinstatement of sexual desire in post-menopausal women. We have recently discovered that the administration of testosterone propionate (TP) in combination with estradiol benzoate (EB) significantly increases sexually appetitive behaviors in ovariectomized (OVX) Long-Evans females, compared to those treated with EB-alone. The current study was designed to investigate the role of testosterone's aromatization to estradiol on sexual appetitive and consummatory behaviors of OVX Long-Evans rats. Sexually experienced Long-Evans female rats were given either EB, EB+ TP, or EB + TP in combination with the aromatase inhibitor Fadrozole (EB+TP+FAD). Females treated with EB + TP + FAD displayed significantly higher hops and darts, solicitations and lordosis magnitudes when compared to EB-alone females. This suggests that aromatization may not be necessary for TP to enhance female sexual behavior and may be exerting this effect through an androgenic pathway.

METHODS

OVX Long-Evans females primed with EB and progesterone (P) administered 48 and 4 hours prior to sexual training respectively. EB (10µg), P (500µg), and TP (200µg) were dissolved in 0.1mL sesame oil. Fadrozole Hydrochloride (1.25mg/kg, Novartis Pharma) was dissolved in 0.1mL of 0.9% physiological saline containing 20% 2-hydroxy propyl b-cyclodextrin



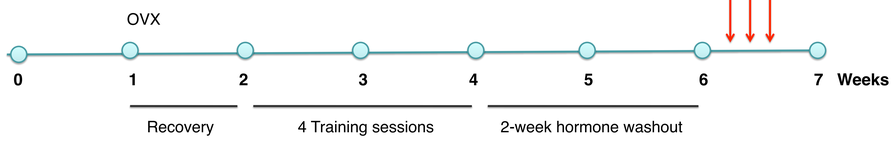
Random assigned to one of 3 experimental groups (*n* = 11/group)

1) EB + Oil + Saline
2) EB+TP + Saline
3) EB+TP+FAD

Day 1: 8am/8pm: FAD or Saline, 12pm: EB

Day 2: 8am/8pm: FAD or Saline

Day 3: 8am: FAD or Saline, TP or oil



RESULTS

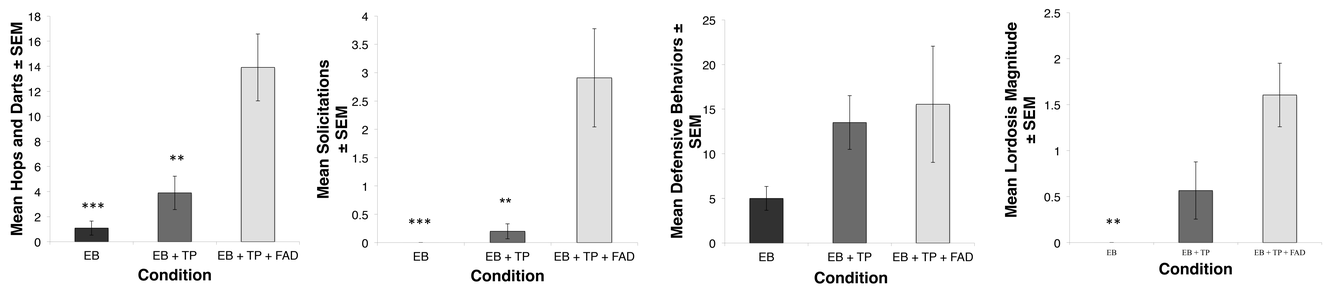


Figure 1: Sexual behaviors of female rats treated with: estradiol benzoate (EB), EB+ testosterone proprionate (TP), or EB + TP + Fadrozole (FAD). *$p < .05$, **$p < .01$, ***$p < .001$ different from EB+TP+FAD.

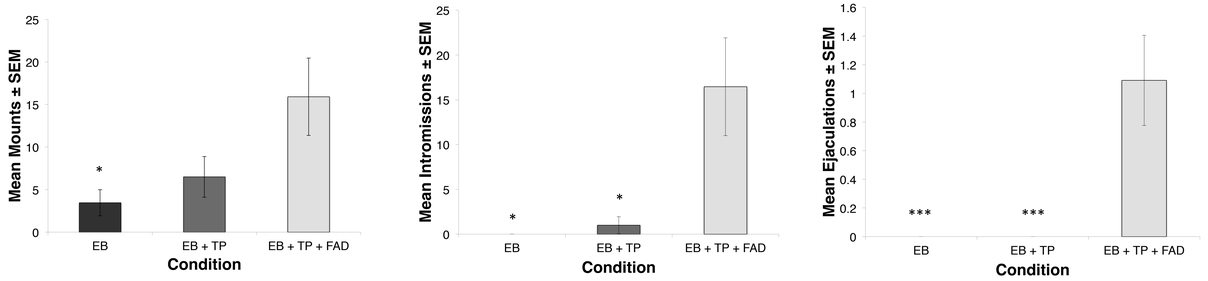


Figure 2: Mean sexual behaviors of male rats copulating with females under: estradiol benzoate (EB), EB+ testosterone proprionate (TP), or EB + TP + Fadrozole (FAD). *$p < .05$, **$p < .01$, ***$p < .001$ different from EB+TP+FAD.

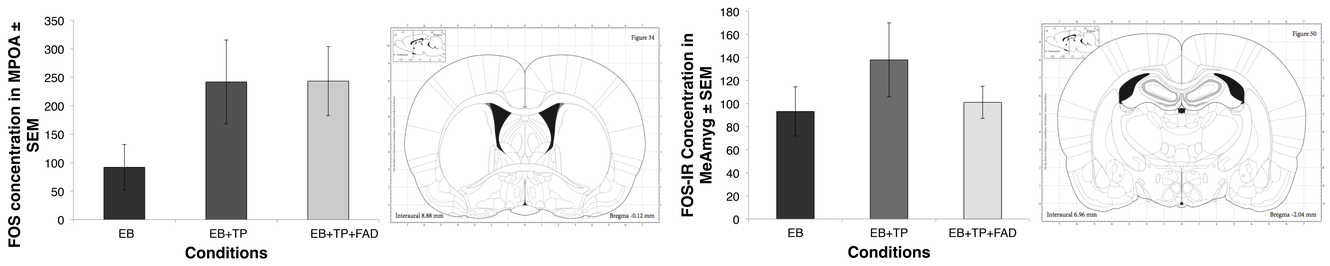


Figure 3: Preliminary FOS-IR findings in both medial preoptic area (MPOA) and medial amygdala (MeAmyg).

REFERENCES & ACKNOWLEDGEMENTS

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CONCLUSION

In conclusion, evidence shows that administering Fadrozole to OVX female rats treated with both EB and TP enhanced hopping and darting behaviors, along with LM. This suggests that testosterone may mediate these effects through an androgenic pathway.