ORIGINAL RESEARCH

Assessment of the Pituitary-Ovarian Axis Function in Response to Caffeine Ingestion in Pubertal *Sprague-Dawley* Rats

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ABSTRACT

Background: Some complications of infertility arise from various factors such as environmental pollution, occupational toxicants, including dietary factors. Caffeine consumption in our diet, from coffee, tea and cigarette of all kinds, has impacted reproductive health.
Method: Eighteen mature female *Sprague-Dawley* rats, with weights ranging between 140-184 g, were used. The rats were divided into three groups (in no order; six rats per group): Control group, 5mg caffeine administered rats and 10 mg caffeine administered rats. The rats were smeared before administration of caffeine to ensure they are normal cycling rats. Caffeine, with concentrations of 5 ml/kg and 10 ml/kg, was administered to the appropriate groups for four weeks. The rats were smeared, after four weeks of administration, to check their phase in the oestrous cycle. Samples of their ovaries were weighed and corpus luteum counted. Serum level of follicular stimulating hormone (FSH), luteinizing hormone (LH) and thyroid stimulating hormone (TSH) obtained from their blood samples were collected and determined. TSH level was significantly reduced at dioestrous phase in 5 mg group.
Results: Both serum FSH and LH were significantly reduced at dioestrus in both 5 mg and 10 mg groups. Caffeine expressed dose dependent stimulatory effect on TSH while it precipitated a reduction in serum FSH and LH level at all doses used during dioestrus. The 10 mg stimulated FSH and LH secretion at oestrous phase which enhances growth and maturation of follicles.
Conclusion: Caffeine thus modulates the activities of the pituitary gland in regulating female reproduction

Keywords: Pituitary-ovarian axis, Caffeine, Gonadotropin, Corpus luteum, Sleep deprivation, *Sprague-Dawley* rats