

UNIVERSITI TEKNOLOGI MARA

**EFFECT OF NICOTINE ON THE ESTROUS CYCLE
OF FEMALE RAT**

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ABSTRACT

The prevalence of smoking among Malaysian adults aged 15 years and above had increased from 21% in 1985 to 31% in 2000. Some 49% of all adult male and 5% of all females are now current smokers. Due largely to population increase, the number of smokers will continue to rise. (Tobacco CPG Malaysia-New 2003).

Hazards of smoking to health is a well known fact, but the number of smokers are still on the increasing trend. Based on the claim made that smoking has adverse reproduction outcomes in women such as infertility, younger age of menopause and menstrual disorder, this research study was conducted using nicotine, which is one of the chemicals present in tobacco product that have effect on physiological system of human. The effect of nicotine on estrous cycle of rats was studied. The method used was through observation of cells present after vaginal smear for duration of 16 days. Result of the study showed that nicotine did prolong the length of the mean estrous cycle from 4.38 days in the controlled samples to 5.54 days in the samples that was injected subcutaneously with nicotine.

CHAPTER 1:

INTRODUCTION

Nicotine is one of more than 4,000 chemicals found in the smoke from tobacco products such as cigarettes, cigars, and pipes. It is the primary component in tobacco that acts on the brain. Nicotine is a powerful stimulant and is also one of the main factors leading to the continued tobacco smoking. Although the amount of nicotine inhaled from tobacco smoke is quite small (most of the substance is destroyed by the heat), it is still sufficient to cause physical and / or psychological dependence.

Women “habitual” cigarette smokers had significantly increased frequency of infertility when compared to nonsmokers, 21% versus 14%, respectively (Doll R.R. *et al*, 1994); Cigarette smoke contains known reproductive toxicants and smoking has been associated with adverse reproductive outcomes in women such as infertility, subfecundity, younger age of menopause and menstrual disorders (Department of Health and Human Services, 2001). Previously, Windham *et al*. (1999), reported that smokers had different menstrual cycle characteristics compared with nonsmokers, heavy smoking was associated with shorter and more variable cycle lengths, with the shortening occurring primarily during the follicular phase. There were some suggestions of increased risk of short luteal phase (< 11 days) and absence of ovulation. The mechanism of these and other reported effects is not known but may reflect alterations in hormone function by components of tobacco smoke, with smoking suggested as having