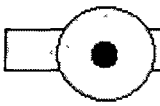
SCOPE OF THE PRESENT INVESTIGATION



Scope of the Present Investigation

Detection of estrus by the male partner is a classical example of pheromonal communication. The male smells the urine and vaginal mucus of female in estrus and makes the claim to be ready fo r mating. Mice use olfactory communication to co-ordinate their reproductive and social behaviour. Urine is believed to be an important source of estrous signals. Estrus urine appears to be involved in sexual attraction of males and to accelerate puberty in young males in addition to disrupting the natural estrous cycle in females. It is believed that the urine of estrous females may carry a variety of messages to both male and female of its species. Attempts have been made to identify and isolate the estrus specific compounds from female mice and successful results have not been obtained. Hence, the aim of the present study was to analyze the urine of female mice at different reproductive status so as to provide evidence regarding estrus specific compounds and to confirm their role as pheromones.

CHAPTER I: ODOUR PREFERENCE TEST

This chapter deals with the odour preference of male mice towards the urine of female mice during various reproductive phases. The frequency and duration of visits were tested. Further, the grooming activity of mice was also tested. This study revealed that male mouse shows preference towards estrus urine than non - estrus urine and this preference is testosterone-dependent. In addition, the role of main and accessory olfactory system in odour preference is also tested. All data were subjected to statistical analysis.

CHAPTER II: BIOCHEMICAL ANALYSIS

This chapter deals with the analysis of biochemical constituents in urine from various reproductive phases. Quantitative estimation of protein, carbohydrates and lipids using UV-spectrophotometer was carried out. The free fatty acids profile was analyzed using Gas Chromatography in mice urine. The hormone assay (RIA) in mice serum was tested. All data were subjected to statistical analysis.

CHAPTER III: CHEMISTRY OF FEMALE URINE

This chapter has been devoted to identify the chemical nature of female mice urine during natural estrous cycle in order to detect the presence of estrus specific compound(s). GC-MS analysis was carried out to know the variation of urinary volatiles. It has the following subheadings such as solvent selection, extraction and chemical characterization of each sample.

CHAPTER IV: CHEMISTRY OF MALE URINE

In this chapter, chemical characterization of male mice urine was carried out to detect male specific urinary volatiles. In addition, the urine of castrated and castrated with testosterone treated mice was tested to identify the endocrine dependence of male specific volatiles.

CHAPTER V: BIOASSAY

This chapter deals with the fractionation of identified compounds using standard methodology. The fractionated compounds were tested with the conspecifics for behavioural patterns like sniffing, licking, mounting etc. All data were subjected to statistical analysis.