ABSTRACT

Reproduction is an important aspect of life as it is an essential process for survival of a species. Many environmental and internal factors are affecting the reproductive process which leads to the reproductive abnormality such as infertility, sterility or impotency. Recently, concern has arisen that many plant or plant products or some naturally occurring compounds have estrogenic activity. They have gained increasing attention because of their phytochemical constituents and their role in treating various diseases like cancer, reproductive ailments, diabetes, immune function etc. The studies reported in this thesis concentrate on the investigation of the phytochemical constituents of *Cleome gynandra* and the role of these compounds affecting the reproductive system of female albino C3H mice.

*Cleome gynandra* Linn. has been selected through the survey conducted in Kamrup district on the basis of its traditional uses by the local healers. In the present study, *Cleome gynandra* Linn. was selected and leaves of the plant was chosen to be used in the study to investigate its effects on the female reproductive system of C3H mice. Phytochemical analysis of the leaves of *Cleome gynandra* Linn. was done by both qualitative and quantitative methods. Toxicity studies were performed to testify the safety of the plant extract on the animal model. Plant extract was prepared in methanol and doses were determined by the method of LD$_{50}$ dose determination. *Cleome gynandra* methanolic extract was administered orally to observe the effect on the uterus, ovary and hormonal changes. Estrogenic property of the plant extract was evaluated by administering the extract in the ovariectomized mice. Uterine wet weight, uterine
protein concentration, serum cholesterol level, sex hormones and uterine histology was studied after treatment with the extract for 7 days. Experiments were conducted in the female gonado-intact mice for 7 and 21 days to observe the effects on uterus, ovary, sex hormones and histological structures. Effects of the plant extract was also studied for implantation, different pregnancy parameters such as gestation period, litter size, birth weight of the pups, fertility index, survival rate and live pups.

The present study revealed the presence of important phytochemicals including flavonoids, phenols and steroids along with other phytochemicals. The extract showed prominent in vivo estrogenic effect and also affected the ovarian follicular count and estrous cycle. The ovarian and uterine histoarchitecture was also affected after the 7 and 21 days of treatment with Cleome gynandra methanolic leaf extract. Implantation study showed a negative impact of the plant extract on the number of implants which further affect different pregnancy parameters. From different experiments, it can be assumed that the extract possesses estrogenic property.

Therefore, it can be concluded that Cleome gynandra Linn. has in vivo estrogenic property affecting different reproductive parameters which is further accompanied by antimplantation activity and requires further study for identifying the active compounds/chemicals present in it.