SUMMARY
AND
CONCLUSION
• Modulation of reproductive behaviour and fertility control functions with graded and repetitive doses (0, 50, 100, 200 and 400 mg/kg body weight/day) of aqueous leaf extract of the herb *Ocimum sanctum* Linn. for 14 to 20 days were studied in different reproductive states (non-pregnant, pregnant and lactating) of albino rats.

• Non-neurotoxic, graded and repetitive doses (0, 50, 100, 200 and 400 mg/kg/day) of the herb for 14 to 20 days showed no changes in rota-rod, open-field test and locomotory activities, improved haemoglobin concentration with normal liver enzymes level. So, these graded doses were selected for reproductive functions study in different reproductive states of Wisher strain female albino rat with average body weight 150-200 gm and age 125-150 days.

• Graded doses of 100, 200 and 400 mg/kg/day of *O. sanctum* leaf extract showed significant increase in duration of estrous cycle with prolonged diestrous stage in normal albino rat.

• After withdrawal of the extract for 16 to 20 days reversibility of the normal duration of estrous cycle indicating reversible nature of estrous modulatory activity of *O. sanctum* extract.

• Extract also inhibited the Lordosis response (Copulatory behaviour) for female receptivity of experimental rat.

• Simultaneous significant decreased level of reproductive hormones, for example, estrogen, progesterone, FSH, LH, testosterone and prolactin as well as decreased activities of hormone synthesizing enzymes Δ5-3β-hydroxysteroid dehydrogenase (Δ5-3β-HSD) and 17β-hydroxysteroid dehydrogenase (17β-HSD) were observed with same graded doses of *O. sanctum* extract.
• Significant increase in body weight as well as uterine weight; reduced ovarian weight and significantly reduced corpus luteum count indicated extracts influence on hormonal level of treated rat.

• Microscopical structure of treated ovaries showed increased atretic follicles in comparison to control ovaries indicated extract induced luteolysis. Small non-secretary endometrial glands indicated low ovarian hormonal influence in treated uterus.

• Graded doses of extract initiated suppression of pregnancy and delivered significantly decreased number of low birth weight litters indicating antiimplantation effect of the extract. Autopsy of pregnant uterus with graded doses of extract showed utero resorption indicating abortifacient effect of the extract.

• Simultaneously decreased level of serum estrogen, progesterone, LH, FSH, testosterone, prolactin hormones and decreased activities of gonadal Δ5-3β-HSD and 17β-HSD enzymes were observed in same *O. sanctum* extract treated pregnant animal.

• *O. sanctum* treated animal showed reduced maternal behavioural score with decreased effect on maternal behaviour (pup retrieval and grouping, crouching over young in nursing position, alert on hearing the squealing of pups, feeding them after collection at the corner of the cage and biting tendency of cage wire or any stiff material) in lactating state which cause wasting of neonatal muscle and reduced body weight of litters.

• Simultaneous estimation of reproductive hormones estrogen, progesterone, FSH, LH, testosterone and prolactin and gonadal Δ5-3β-HSD and 17β-HSD enzymes activity indicated *O. sanctum* decrease both hormone level and enzymes activity during lactating state of treated animal.
• Significant reduction of serum cholesterol level and significant increase of adrenal gland ascorbic acid indicated extracts influence on hormonal level of treated rat.

In conclusion, dose dependent *O. sanctum* extract showed changes of reproductive behavioural functions of albino rat model. Treated female rat showed prolonged estrous cycle, decreased copulatory (Lordosis) behaviour indicating effect of extract on hormonal level. Anti implantation and abortifacient effect with reduced serum gonadotropin level, decreased folliculogenesis, steroidogenesis and ovarian enzymes supported the reproductive modulatory effect of *O. sanctum* on albino rat model. Long term reproductive doses of extract also affect the microanatomical structure of uterus with reduced glands, congestion and oedema and reduction of number of follicles in ovaries suggested low steroidal hormonal influence in *O. sanctum* extract treated animal. Reduced level of cholesterol and accumulation of adrenal gland ascorbic acid indicated the inhibitory influence of extract on synthesis of reproductive hormones. In lactating state depressive score of maternal behaviour, reproductive steroidal hormones and anterior pituitary polypeptide prolactin indicated inhibitory effect of extract on maternal hormonal status.

All these results indicate influence of this economical, non-toxic herbal agent *O. sanctum* leaf extract for modulation of reproductive function in mammals (female albino rat), which may throw some light on facilitatory influence for fertility control and maintenance of homeostasis for all socio-economic groups of people in our vast populated country.