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Short Communicati

Fertility in Bitches following Intravaginal Artificial Insemination using fresh semen*

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ABSTRACT

Twenty four bitches of different breeds were divided into group I and II, they were bred by artificial insemination and natural service, respectively. Fertile breeding time was assessed by vaginal cytology and vaginoscopy. Breeding with fresh semen was done when the vaginal smears showed 70-80 per cent of superficial and cornified cells and observation of vaginal mucosal crenulation through vaginoscope. The breeding continued at every 3rd day until diestrus. Semen was collected from six male dogs of respective breeds by digital manipulation. Conception rate of 66.66 and 63.15 per cent and litter size of 5.8 ± 0.46 and 4.6 ± 0.32 was obtained in group I and group II respectively in this study.

Keywords: Artificial Insemination, Fresh Semen, Intravaginal, Fertility rate, Bitch

Artificial insemination is the preferred method of breeding when the bitches are affected with vaginal stricture, tumors or prolapse (Feldman and Nelson, 1996). Male dogs with poor libido, weakness or pain when mounting or ejaculating due to diseases of the spine, hind limbs or prostate also can be made fertile through artificial insemination. Behavioural problems in both sexes necessitate the adoption of AI technique. Further, the AI technique ensures utilization of quality males as well as the fertile breeding time. Its fertility results are equal to natural breeding. In India, the research on AI in dogs is limited. Hence the present study is undertaken with the objective to compare the fertility rate in bitches following intravaginal insemination using fresh semen with natural service.

Twenty four bitches of different breeds *viz*, German Shepherd , Doberman , Rajapalayam, Spitz and Boxer brought to the small animal Gynaecology and Obstetrics ward of Madras Veterinary College teaching Hospital, Chennai were divided into group I and II. Four healthy and sexually mature dogs of respective breeds aged between 1.5 to 5 years owned by private dog breeders and two stud dogs maintained in the Department of Animal Reproduction Gynaecology and Obstetrics, Madras Veterinary College, Chennai for the artificial insemination scheme were used as semen donors.

Semen was collected by digital manipulation as described by Linde Forseberg (1991) in separate clear, graduated sterile semen collection cups. Immediately after semen collection, it was examined by phase contrast microscope. The semen samples were assessed for their suitability to be used in the insemination based on colour, consistency, motility, spermatozoal concentration, live and dead count and abnormal spermatozoa.The first and second fraction of the semen was mixed with prostatic fluid so as to bring the total volume to 3-5 ml for insemination. Vaginal exfoliative cytology was performed at 3 days interval starting from 5th day of vaginal bleeding. Vaginal smears were obtained by cotton swab tecnique as described by Feldman and Nelson(1996). The smears were stained with Leishman stain and examined under microscope using oil immersion. Vaginoscopy was performed on every 3rd day using a rigid cysto-Urethro-Scope(Karl Storz, Gmbh, Tiuttingen, Germany) when the vaginal exfoliative cytology showed more than 80 percent of superfic

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and cornified cells.

Artificial insemination was carried out in group II (n=19) bitches when the vaginal mucosa of the bitches showed shrinkage with angulation of mucosal profiles known as crenulations. The insemination was continued on every 3rd day with monitoring the stage of the estrous cycle by vaginal exfoliative cytology and vaginoscopy until the animals entered into diestrus. Similarly, the group I (n=5) bitches were advised natural breeding on every 3rd day until diestrus. A minimum recommended dose of 150 to 200 X 10^6 motile spermatozoa was used for insemination.

Intravaginal artificial insemination was performed following the technique described by Concannon *et. al.* (2001). Pregnancy diagnosis was performed 30 days after insemination using ultrasonography. The conception rate, whelping rate and litter size were calculated following whelping.

The physical and morphological characteristics of semen from six male dogs of different breeds is given in Table I. The overall mean sperm concentration was 648.3 ± 54.16 with the range of 480-850 millions/ml. The percentage of live and dead spermatozoa was 87.16 ± 1.83 and 12.84 ± 1.06 with the range of 80-93 and 7-20 per cent respectively. The mean sperm abnormalities recorded were 17.5 ± 2.03 with the range of 6-22 percent in all the six dogs.

Determination of fertile breeding time based on vaginal cytology showed that day of onset of cytological studying estrus occurred 9.26 ± 0.83 and 86 ± 0.4 days from day 1 of proestrual bleeding and ranged from day 3 to 16 and 8 to 19 days in group I and II respectively in the present study.

In this study day 1 of diestrus occurred 16.53 ± 0.42 and 18.44 ± 0.86 from day 1 of proestrus bleeding in group I and II respectively.

In this study, a conception rate of 66.66 and 63.15 per cent was obtained with natural breeding and artificially inseminated bitches respectively. Similar conception rates of 62.3 per cent (Root and Johnston, 2000) and higher rates upto 90 and 100 per cent have been reported by (Concannon *et. al.*, 2001). The litter size of 5.8 ± 0.46 and 4.6 0.32 was obtained for the naturally bred and artificially inseminated bitches respectively.

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Table1: Mean seminal characteristics of six fertile dogs

Parameters	Initial Motility (%)	Volume (ml)			Concentration (10^6/ml)	Live & Dead (%)		Abnormalities (%)
		Pre Sperm	Sperm rich	Post Sperm		Live	Dead	
Mean	76.6 ± 4.30	1.93 ± 0.37	1.46 ± 0.27	3.78 ± 1.0	648.3 ± 54.16	87.16 ± 1.83	12.84 ± 0.74	17.5 ± 2.03
Range	60-90	1-3	0.6-2.5	1.2-7	480.850	80-93	7-10	6-22