PREOVULATORY FOLLICLE DIAMETER AND SERUM ESTRADIOL-17β AT ESTRUS HAS NO RELATION WITH SUBSEQUENT ESTABLISHMENT OF PREGNANCY IN POSTPARTUM CYCLIC BUFFALO

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ABSTRACT

Twelve postpartum cyclic buffalo were artificially inseminated (AI) at an interval of 24h during estrus. Ultrasonography was performed at first AI to assess the preovulatory follicle diameter and blood samples were collected at same time to measure serum estradiol-17β concentrations. Sonography-aided pregnancy diagnosis was carried out on day 28 post-AI. The study revealed that preovulatory follicle diameter (P, 9.44±0.19 *vs.* NP, 9.05±0.25 mm) as well as serum estradiol 17β (P, 14.59±0.93 *vs.* NP, 13.39±0.37 pg/ml) on the day of AI had no relation (p>0.05) with subsequent pregnancy outcome in buffalo.

Keywords: Buffalo, Estradiol-17β, Pregnancy, Preovulatory follicle, Ultrasonography

Low productivity issues in buffaloes have been related to preovulatory follicle (POF) diameter, circulating estradiol concentration at estrus and subsequent corpus luteum development (Varughese *et al*., 2014). In dairy cattle, the relationship between pregnancy establishment and ovulatory follicle size was reported (Pfeifer *et al.,* 2012). However, such investigations in buffalo are meager (Varughese *et al*., 2014). The present study was conducted in postpartum cyclic Murrah buffalo to correlate the POF diameter and serum estradiol with pregnancy establishment following insemination at estrus.

Twelve healthy graded female Murrah buffalo on completion of their 90-day postpartum period and between 2nd and 5th parity were used in the present study. All the buffalo were artificially inseminated twice at an interval of 24h during estrus. The animals were subjected to ultrasonographic examination with a 5 MHz linear probe attached to Sonaray scanner at first AI to determine POF diameter and on day 28 after first-AI to detect early pregnancy through embryo viability (heart beat). The follicle diameter was determined by averaging diameter at the widest points and perpendicular to the first measurement using the internal calipers on the scanner. Jugular vein blood samples were collected at the time of estrus. Serum was separated immediately and was stored at -20°C until the analysis of estradiol-17β using commercial kits by Enzyme linked fluorescent immunoassay (ELFA)**.** The paired and unpaired t-test method was used to analyze the collected data using SPSS® 20.0 software package.

At the time of AI, the POF diameter and serum estradiol-17β was similar (p>0.05) in buffalo that became pregnant compared to their non-pregnant counterparts (Table 1). Similarly, others opined that ovulatory follicle size had no apparent effect on pregnancy rate of dairy cattle when ovulation occurred spontaneously after detection of standing estrus (Perry *et al*., 2005). On the other hand, others stated that higher follicular diameter resulted in higher serum progesterone about 7 days after ovulation (Pfeifer *et al*., 2012).

From the present investigation, it can be concluded that preovulatory follicle diameter and

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Table 1: Relation of preovulatory follicle diameter and serum concentrations of estradiol-17β with establishment of pregnancy in postpartum cyclic buffalo (n=12)

	Preovulatory follicle, mm	**Estradiol-17β**, pg/ml
Pregnant	9.44±0.19	14.59±0.93
Non-pregnant	9.05±0.25	13.39±0.37

serum estradiol-17β at estrus had no relation with subsequent establishment of pregnancy in postpartum cyclic buffalo

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