STUDIES ON INDUCTION OF OESTRUS IN POST-PARTUM ANOESTRUS LOCAL COWS WITH PROGESTERONE PRIMED GnRH AND PROGESTERONE TREATMENT*

R.D. KASBE[1], N.M.MARKANDEYA[2], A.G. SAWALE[3], S.A. PAWAR[4]

Department of Animal Reproduction, Gynaecology and Obstetrics,
College of Veterinary and Animal Sciences, MAFSU, Parbhani, 431 402, Maharashtra, India

Received : 03.03.2013

ABSTRACT

Accepted : 12.10.2013

The local anoestrus cows were treated for induction of oestrus and out of eighteen treated cows with injection progesterone (250 mg) on day1followed by inj. GnRH (0.0105 mg) on day 10 in group I, 88.88 per cent animals exhibited oestrus and after insemination 81.25 per cent cows conceived with 1.76 services per conception, whereas in group II (n = 18) of Progesterone treatment 63.63 per cent cows showed exhibitory oestrus and after insemination, 63.63 per cent conceived with 2.00 services per conception as against control. The progesterone treatment response in terms of oestrus induction, conceptions, pregnancy rate and cyclicity rate statistically differed with progesterone primed GnRH therapy.

Anestrous is a common problem in dairy production systems and progesterone supplementation is an effective and efficient method for treating anestrous cases. Thus progesterone primed GnRH therapy improves the rate of oestrus induction, ovulation and conception and combination protocol is used in anoestrus cows for high success rate of fertility. Present investigation was carried out to assess efficacy of progesterone and progesterone primed GnRH therapy in local anoestrus cows.

The present study was carried out on post partum anoestrus local cows (n=54). The experimental group-I (n=18) were treated with 250mg intramuscular injection of progesterone on day 1st , followed by injection of GnRH (0.0105 mg) on day 10th. The group II cows (n=18) were treated with the 250mg injection of progesterone whereas group-III cows (n=18) were kept as untreated. Animals were followed for heat expression, duration of oestrus, ovulation, CL confirmation and pregnancy diagnosis.

Out of eighteen anoestrus cows treated with progesterone primed GnRH, sixteen cows (88.88 per cent) showed exhibitory oestrus within 3.10 ± 0.05 days of completion of treatment but two cows did not show exhibitory oestrus, whereas none of the animal from control group was detected in oestrus. Sixteen responded animals were confirmed in oestrus by per rectal palpations and were inseminated timely as per the initiation of oestrus. All the cows in oestrus were followed on day 1st of oestrus for ovulations and confirmation of CL was attempted on day 10th. Out of sixteen cows inseminated on oestrus, thirteen (81.25 per cent) conceived with 1.76 services per conception. The expected synchronized response within first five days of treatment and keen observations regarding detection of oestrus has proved high conception rate even in local cows treated under present experiment. Three animals failed to conceive within three services and subsequently one animal turned as anoestrus. Two responded cows remained cyclic with unknown cause for infertility, thus the pregnancy rate was noted as 72.22 per cent and the cyclicity induction rate was recorded as 83.33 per cent in the present trial.

Out of eighteen treated anoestrus cows, eleven cows (61.11 per cent) showed exhibitory oestrus within average 13.15 ± 0.26 days after treatment but seven

*Part of M.V.SC thesis submitted to MAFSU, Nagpur. Corresponding authors: [1,4]: M.V.Sc. Scholar, [2]: Head and Professor,[3]: Assistant professor. College of veterinary and animal sciences, Parbhani, 431402 (MS)

cows did not show exhibitory oestrus. Seven non-responded and control group animals were followed per rectally for a week but ovarian changes did not show any change. Eleven responded animals exhibiting oestrual signs were confirmed in oestrus by per rectal examinations and were timely inseminated in the present experiment. Of the inseminated animals, seven cows (63.63 per cent) conceived with 2.00 services per conception. Subsequently, it was observed that one cow continued cyclicity with non breeding tendency but three others failed to continue cyclicity and regained ovarian inactivity. On follow up, the pregnancy rate was noted as 38.38 per cent in the present trial and establishment of cyclicity rate was found to be 44.44 per cent.

Oestrus induction response in cows treated with present therapy was 100.00 per cent in beef cows as reported by Smith *et al.* (1987). The progesterone primed GnRH protocol has been extensively used in Indian buffaloes and better oestrus induction response has been reported by Markandeya and Bharkad, 2002 (83.33 per cent during summer and 100.00 during both spring and winter); Markandeya and Patil, 2003 (83.33 per cent) and Honparkhe *et al.,* 2004 (90.00 per cent) and Gaikwad *et al.*, 2004 (80.00 per cent). Wide range of conception rate has been noted in buffaloes by Gaikwad *et al.,* 2004 (87.50 per cent); Markandeya and Bharkad; 2002 (00.00, 100.00 and 50.00 per cent conceptions during summer, winter and spring respectively); Markandeya and Patil, 2003 (60.00 per cent in heifers) and Honparkhe *et al.,* 2004, (44.40 per cent). Mavi *et al.* (2007) conducted two separate trials with 1000 mg progesterone in buffalo heifers (100 mg for ten days Vs 500mg twice) followed by PMSG @ 1000 I.U. instead of GnRH and noted oestrus induction rate as 75.00 and 66.60 per cent with pregnancy rate as 00.00 and 75.00 per cent respectively, which indicates assured effect of progesterone for induction of oestrus but unreliable efficacy of PMSG for initiation of pregnancy and hence it is impossible to replace role of GnRH with that of PMSG.

Oestrus induction rate in cows treated with progesterone lower than the present observation has been recorded by Mukesh Kumar *et al.,* 2004 (16.66 and 33.22 per cent in buffaloes) but higher response has been observed by Dhoble *et al.,* 2004 (80.00 per cent in cows and buffaloes); Markandeya and Bharkad., 2004 (83.33 per cent in buffaloes); Mukesh Kumar *et al.,* 2004 (83.33 and 66.66 per cent in buffaloes) and Markandeya *et al.,* 2009 (70.00 and 80.00 per cent in cows and buffaloes), respectively. The fact is also proved by Joshi *et al.,* 1990 (25.00 per cent in cows); Markandeya and Bharkad, 2004 (100.00 per cent in buffaloes) and Mukesh Kumar *et al.,* 2004 (100.00, 80.00, 75.00 and 50.00 per cent in buffaloes).

Estrus induction and synchronization systems that use progesterone have three primary advantages over systems that do not use progesterone. First, maintaining the blood progesterone concentration at the level greater than 1 ng/ml with suppression of both the LH surge and estrous behavior. Progesterone therapy is of choice of treatment for induction of estrus and is used clinically since last 50 years as the same is cost effective. As progesterone carries potential to induce estrus, definitely the heat induction and synchronization protocol might have higher efficacy, if those are adopted after supplementation of progesterone. Progesterone induces fertile oestrus through its withdrawal effect and induces follicular development with cyclicity. Additional stimulus incorporated at the time of withdrawal effect of progesterone further enhances chances of follicular developments and surety of ovulation.

Progesterone treatment was found to be successful in inducing moderate fertility response in local anestrus cows for estrus induction and conceptions. The treatment was found to have numerically lowest response for all fertility parameters and the treatment showed statistically significant and lower response in terms of recorded fertility parameters as compared with other protocols in the present experiment. None of the animal from control group was in heat, which indicated appropriate and accurate diagnosis of anoestrus stage in local cows. Present trial concluded that the Progesterone primed GnRH therapy was confirmed to be efficient in induction of ovarian response under field condition. And

Progesterone treatment in anoestrus cases had limited but assured success in local cows with cheap and safe use of hormonal approach.

REFERENCES

Dhoble, R. L., A. G. Sawale, S. M. Gaikwad, U. B. Kumbhar and D. P. Bhoite (2004) Studies on efficacy of progesterone for induction in post partum anoestrus buffaloes. XX Annual Convention of ISSAR and Technical compendium, pp: 68.

Dhoble, R. L., D. P. Bhoite, U. B. Kumbhar, A. G. Sawale, S. M. Gaikwad and K. R. Deokate (2004) Therapeutic application of progesterone for oestrus induction in post partum anoestrus crossbred cows, Technical compendium, pp : 68.

Gaikwad, S. M., R. L. Dhoble , A. G. Sawale, S. G. Deshmukh, K. R. Deokate and S. G. Chavan (2004) Fertility improvement using progesterone and GnRH in post partum anoestrus buffaloes, Technical compendium, pp : 69.

Honparkhe, M., J. Singh, D. Dadarwar, G.S. Dhaliwal and Ajit kumar (2004) Induction of oestrus and fertility using exogenous hormones in anoestrus and sub-oestrus bovines, Technical Compendium. Pp. 78-79

Markandeya, N. M. and G. P. Bharkad (2001) Improvement of pregnancy rate in progesterone prim GnRH. Therapy in post partum anoestrus buffaloes during spring. *The blue cross book* 16 : 20-21.

Markandeya, N. M. and G. P. Bharkad (2002) Effect of Progesterone primed gonadotropin releasing hormone (GnRH) on induction of pubertal oestrus in buffaloes during different season. *Ind. Vet. J.* 79 (1) : 84-85.

Markandeya, N. M. and A. D. Patil (2003) Studies on hormonal therapies for induction of post- partum oestrus in buffaloes. *Intas Polivet* : vol. 04 No. II: 167-169.

Markandeya, N. M., C. S. Khandalikar and C. R. Bedarkar (2009) Clinical trial report on evaluation of efficacy of progesterone hormones in anoestrus cows and buffaloes XXV annual convention of ISSAR 10-12, pp: 125.

Mavi, P. S., C. S. Bhaga, Narendra Singh and R. Chima (2007) Effect of hormonal treatment and induction of oestrus and plasma mineral composition in true anoestrus buffalo heifers. *Ind. J. Anim. Reprod.*, 28 (01): 39-41.

Mukesh Kumar, C. Singh and Dhananjay Kumar (2004) Response to intramuscular progesterone administration on resumption of oestrus and serum cholesterol concentration in buffaloes during summer. XX Annual Convention of ISSAR and National Symposium, Technical compendium pp : 74.

Smith, V. G., J. R. Chenault, J. F. Mcallister and J. W. Lauderdale (1987) Response of post partum beef cows to exogenous progestogens and gonadotropin releasing hormone. *J. anim. Sci.*, 64: 540-551.