



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2019; 8(9): 514-515
© 2019 TPI
www.thepharmajournal.com
Received: 04-07-2019
Accepted: 06-08-2019

K Sahithi

MVSc Scholar, Part of MVSc
Thesis Submitted to Sri
Venkateswara Veterinary
University, Tirupati,
Andhra Pradesh, India

K Sadasiva Rao

Professor & University Head,
VGO, NTR College of Veterinary
Science, Gannavaram, Andhra
Pradesh, India

M Srinivas

Professor, VGO, NTR College of
Veterinary Science,
Gannavaram, Andhra Pradesh,
India

N Lakshmi Rani

Professor & Head, Veterinary
Medicine, NTR College of
Veterinary Science,
Gannavaram, Andhra Pradesh,
India

Correspondence

K Sahithi

MVSc Scholar, Part of MVSc
Thesis Submitted to Sri
Venkateswara Veterinary
University, Tirupati,
Andhra Pradesh, India

Efficacy of Heatsynch on pattern of estrus and fertility in postpartum anestrous Ongole cows

K Sahithi, K Sadasiva Rao, M Srinivas and N Lakshmi Rani

Abstract

Heatsynch hormonal protocol was studied for the treatment of anestrus in postpartum lactating Ongole cows (n=8). Following the treatment, 6 cows exhibited estrus after estradiol benzoate injection. The estrus detection rate was 75 (6/8) per cent. Mean time to onset of estrus was observed as 57.3±3.68 h. The per cent of cows that showed intense, intermediate and weak estrus were 33.33, 50.00 and 16.67 per cent. Peak estrus synchrony was observed, with highest number of animals exhibiting estrus between 48 to 72 h with 66.67 (4/6) per cent. The conception rate at induced estrus was 50.0 (4/8) per cent. In the present study, overall conception rate among the postpartum lactating anestrous Ongole cows was higher with 62.5 (5/8) per cent in Heatsynch group compared to 25.0 (2/8) per cent in the control group. The results of the present study with inseminations at induced estrus in postpartum lactating anestrous Ongole cows appears to be an effective tool of managing fertility by using Heatsynch protocol.

Keywords: Anestrous, estrus, Heatsynch, Ongole cows, postpartum

Introduction

Ongole is a triple purpose (milk, draught and beef) cattle breed known for adaptability traits, superior production capacity under adverse climatic conditions and disease resistance, which gained worldwide recognition (Vinoos *et al.*, 2007) [8]. Postpartum anestrous is one of the most common reproductive disorders encountered in livestock farms leading to prolonged inter-calving period and reduced milk production. Hormonal induction of estrus and ovulation is an effective method for increasing conception rates in anestrous cows. Several hormonal protocols that are effective in induction of ovarian activity, estrus behavior and control of ovulation have been employed for improving fertility of cows. Synchronization of estrus as well ovulation occurs in Heatsynch protocol as estradiol compound stimulates estrus expression (Pancarci *et al.*, 2002) [6]. The present study was undertaken to evaluate the efficacy of Heatsynch on pattern of estrus and fertility in postpartum anestrous Ongole Cows.

Material and Methods

Postpartum anestrous Ongole cows maintained under standard feeding and managemental conditions at Cattle Project, Livestock Research Station, Lam Farm, Guntur, were included in this study. These postpartum anestrous cows were randomly allotted into two experimental groups (Heatsynch and Control groups each consisting of 8 animals). In Heatsynch group, cows were administered with IM injection of GnRH analogue (Pregulate, Virbac) @ 10 µg on day 0 followed by IM injection of Cloprostenol sodium (Pragma, Intas) @ 500 µg on day 7 and IM injection of Estradiol benzoate (Pregheat, Virbac) @ 1 mg on day 8 where as, 8 untreated cows were kept as Control group. At induced/spontaneous estrus the following parameters were studied viz., estrus response, intensity of estrus and degree of estrus synchrony. In Heatsynch group, fixed time inseminations were performed at 48 and 60 hrs post-estradiol injection, while in control group the cows were inseminated at spontaneous estrus by adopting AM-PM rule. Cows in estrus were inseminated using good quality frozen thawed semen. Cows detected at subsequent estrus were re-inseminated up to 3 cycles and in non return cases pregnancy was confirmed per rectum at 60 days after AI. Conception rate and overall conception rate were recorded for both the groups under study. The results were analyzed as per standard statistical procedures.

Results and Discussion

The estrus response percentage following Heatsynch protocol was 75.0 (6/8), while in control group it was 37.5 (3/8). The estrus (75.00%) response with Heatsynch (Group A) treatment in

Ane .strous Ongole cows of the present study was lower when compared with the observations of Buhecha *et al.* (2016)^[5] and Borakhatariya *et al.* (2017)^[4] who reported it to be 91.66 and 90.00 per cent, respectively in postpartum anestrous cows treated with Heatsynch protocol. The variation in estrus response might be due to differences in breed and season of study.

The mean time to onset of estrus was 57.3±3.68 (48 to 72) hours in Heatsynch group. The mean estrus induction interval for Heatsynch protocol found in the present study was higher to the earlier reports of Ashwani *et al.* (2015)^[1] who opined that the mean time required for the onset of estrus (h) in Heatsynch protocol was 38.83±3.69 h, while Buhecha *et al.* (2016)^[5] reported the estrus induction interval in Heatsynch as 68.17±1.24 h. The time interval to onset of estrus in Heatsynch protocol could be attributed to the presence of preovulatory follicle at the time of PGF₂α administration on day 7.

The intensity of estrus in Heatsynch group was intense, intermediate and weak in 33.33, 50.00 and 16.67 per cent of cows, respectively with a peak estrus synchrony of 66.67 (4/6) per cent in cows between 48 to 72 hours after estradiol injection. Whereas in control group none of the cows exhibited intense estrus while intermediate and weak estrus was recorded as 66.67 and 33.33 per cent cows, respectively. However, Ashwani *et al.* (2015)^[1] observed intense (66.67%), intermediate (33.33%) and weak (0.00%) estrus behaviour in Heatsynch treated animals.

In the present investigation, intense estrus was observed at the rate of 33.33% (2/6) in Heatsynch group, out of which all have conceived (2/2). Intermediate estrus was observed at the rate of 50.0% (3/6) in Heatsynch, out of which two cows conceived (2/3). Weak estrus was observed in a single cow from Heatsynch group (16.7%, 1/6). The single cow that exhibited weak estrus in Heatsynch group failed to conceive in the present study. In the control group, one out of two cows that exhibited intermediate estrus was conceived, where as the single cow that exhibited weak estrus failed to conceive in the present study.

The conception rates were 50.0 (4/8) and 12.5 (1/8) per cent in Heatsynch group and control group, respectively. The conception rate recorded in the present study was higher compared to the earlier observation of Buhecha *et al.* (2016)^[5] who reported the conception rates obtained at induced estrus in cows under Heatsynch protocols as 33.33%. The conception rate at induced estrus as reported by Bhoraniya *et al.* (2012)^[3], Ashwani *et al.* (2015)^[1] and Borakhatariya *et al.* (2017)^[4] reported 16.67, 50.00 and 20.00 per cent, respectively which was lower than the present observation. Pancarci *et al.* (2002)^[6] reported 35.1 per cent conception rate after TAI following Heatsynch protocol in lactating dairy cows. The overall conception rate in postpartum lactating anestrous Ongole cows treated with Heatsynch group was 62.5 (5/8) per cent and 25.0 (2/8) per cent in control group. On the contrary, the overall conception rate in Heatsynch group recorded by Bartolome *et al.* (2005)^[2], Sani *et al.* (2011)^[7] and Buhecha *et al.* (2016)^[5] was lower (16.1, 16.6 and 41.66 per cent, respectively) than the present study. Bhoraniya *et al.* (2012)^[3] reported the overall conception rate in Heatsynch treated group as 50.00%. The variations in the conception rate might be due to differences in active principle of the hormones, type of breed and seasonal variations.

It was concluded from the present study that Heatsynch protocol could be effectively used to resume ovarian cyclicity

in postpartum anestrous cows under field conditions by practising veterinarians.

Acknowledgements - The authors thank Scientists of Livestock Research Station, Lam Farm, Guntur and Sri Venkateswara Veterinary University (SVVU), Tirupati, for extending the financial support to conduct the research.

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