CONCEPTION RATES AFTER CERVICAL INSEMINATION OF FRESHLY DILUTED SEMEN AND CHILLED SEMEN IN NELLORE SHEEP (JODIPI)

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Received: 29-11-2019 Accepted: 13-07-2020

ABSTRACT

This study was undertaken to evaluate the conception rate of Nellore sheep (Jodipi) with fresh diluted semen (0h) and chilled semen at 24 and 48h (stored at 5pC). Semen was collected, diluted with Tris Citric acid Fructose Yolk diluent and stored at 5pC for 24 and 48h to undertake cervical artificial insemination at natural estrus. The overall conception rates with diluted semen (0h) and chilled semen stored for 24 and 48 h based on 25 day non return rates were 61.90, 47.62 and 42.86 %, respectively. Therefore, it was concluded that spermatozoa are able to maintain their fertilizing ability at 5ºC up to 48 h and artificial insemination can performed with optimum conception rates.

Key words : Sheep, Cervical insemination, Fresh diluted semen and chilled semen

INTRODUCTION

Artificial insemination in sheep is in practise since a long period but the success of AI in sheep was not similar to that in cattle because of problems like tortuous cervix canal in ewe, lack of easy method for penetration of A.I gun through ewe cervix etc. (Cseh et al., 2012). In India, information on AI in sheep was lesser in small ruminants (Morrell, 2011) with lesser conception rates with the cervical insemination of chilled semen (Salamon and Maxwell, 2000). Therefore, to improve the fertility following cervical AI of chilled semen, the present study was undertaken to know the conception rate in Nellore jodipi ewes inseminated with diluted semen and chilled semen stored at 5°C for 24 and 48h.

MATERIALS AND METHODS

The study was conducted at Livestock Research Station Palamaner by utilizing three healthy Nellore rams with good libido and maintained under semi-intensive system having similar environmental conditions and feeding patterns. Semen was collected from rams and sixty three multiparous ewes were inseminated by cervical insemination method. After semen collection, samples having good initial motility (>50%) were diluted with tris fructose citric acid egg yolk diluent at the rate of 200 × 106 spermatozoa per dose. Later diluted semen was either used for for insemination immediately or chilled in refrigerator at 5°C for 24 or 48 h for insemination at detected estrus by the apronised rams. During insemination, ewes' hind legs were raised by an attendant and the perineum and vagina were cleaned thoroughly. Later, one end of sterile vaginal glass speculum (200 mm length, 1.8 mm thickness and 24 mm with outer diameter) (Fig. 1) was lubricated with paraffin liquid and inserted gently into vagina as far as possible to the entrance of the cervical opening. Then the semen sample of about 0.2 ml was inseminated into the cervix through pipette tip by pressing rubber bulb slowly (Fig. 2) and the hind limbs were lowered after few minutes. Conception rates were assessed based on 25 d non return rate as per the recommendations of Anderson (1999) and Paulenz et al. (2003). Non return rates were detected by using apronized rams and the animals those did not come to heat were considered as conceived.

RESULTS AND DISCUSSION

Out of 21 ewes inseminated with TCFY diluted semen (0 h) 13 ewes did not return to estrus having the overall conception rate of 61.90 %. While, among 21 ewes each inseminated with chilled semen stored for 24 and 48 h, ten and nine ewes, respectively did not return to estrus having the overall conception rate of 47.62 and 42.86 %, respectively.

Similar to the present study, Olesen (1993) also noticed satisfactory conception rates (65-75 %) with freshly diluted semen. The better conception rates obtained in this study with fresh diluted semen compared to chilled semen is akin to the findings of Maxwell and Salamon, (1993), O'Hara et al. (2010) and Lopez-Perez and Perez-Clariget, (2012). These observations might be due to the impaired sperm transport, viability and increased embryonic mortality up on storage of semen at 5°C for 48 h. Robertson and Watson (1987), Maxwell and Salamon, (1993) and Salamon and Maxwell, (2000) also opined that fertility of ram spermatozoa falls very markedly within first 12-24 h of storage as is noticed in this study and also attributed this to the reduction in motility and morphological integrity of spermatozoa.

* Part of the MVsc thesis submitted to Sri Venkateswara Veterinary University, Tirupati, γ Corresponding author email : bramhaiahvet@yahoo.com

At 24 h chilled storage of ram semen obtained conception rate of 47.62%. Similar results were also obtained by O'Hara et al. (2010) who reported the fertility percentage about 45 - 50, 25 - 30 and 15 – 20 after cervical insemination of semen stored for 24, 48 and 72 h, respectively with the overall lambing rate of 65-70 %. While, Pervage et al. (2009) reported average conception rate of 63.61, 61.90, 52.38 and 47.61 % with sperm stored for zero, 1, 2, and 3 d, respectively at 5°C. Fernandez-Abella et al. (2003) reported that the pregnancy rates and lambing rates in adult merino ewes were 37.8 (ranging between 24 and 52) and 31 % (ranging between 20 and 44), respectively by cervical insemination of chilled semen stored at 5°C for 24 h.

The ram semen diluted with TCFY dilutor and stored at 5ºC up to 48h has obtained satisfactory conception rates after cervical insemination indicating that Nellore ram spermatozoa could maintain the fertilizing potential in TCFY dilutor up to 48 h of storage period at 5ºC.

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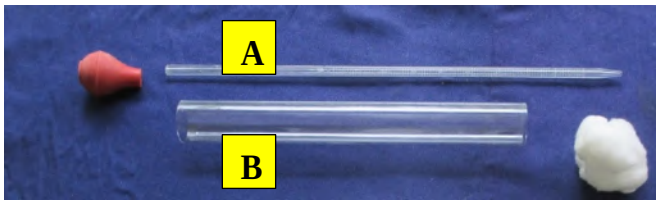

Fig 1: A. Graduated pipette with Rubber bulb; B. Glass Vaginal speculum for AI

Fig. 2: Cervical insemination of Nellore Jodipi ewe at detected estrus