Storage of ram semen at 5 °C: effects of preservation period and timed artificial insemination on pregnancy rate in ewes

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Abstract

Artificial insemination (AI) using chilled ram semen has not been adopted in Uruguay yet, probably due to a lack of information about the use of this technology in the country. This study evaluated the fertility rate obtained in Merino ewes inseminated with ram semen stored at 5 °C in a TRIS-based extender in Uruguayan field conditions. The effect of storage period of semen (Experiment 1) and different times of artificial insemination (Experiment 2) were studied. In Experiment 1, fresh semen was diluted in a TRIS-based extender to a concentration of 200 x 106 spermatozoa/0.2 ml. Semen, maintained at low temperature, was used for cervical insemination at spontaneous estrus, soon after collection (n = 87), or 12 (n = 75) or 24 hours (n = 84) after collection. The cooling-rate curve was adjusted at 0.25 °C/minute, and semen was cooled until it reached a temperature of 5 °C. In Experiment 2, semen was processed in a similar fashion to that of Experiment 1. Estrus was synchronized using a Short-Term Protocol using a progestagen treatment (6 days) with injection of a prostaglandin F2 alpha analogue at sponge insertion and equine chorionic gonadotropin (250 IU) at sponge removal. Insemination was performed 12 hours after estrus detection (n = 49) or at a fixed time (TAI) of 48 (n = 49), 54 (n = 47), or 48 and 54 hours (n = 47) after sponge withdrawal. Conception rate (pregnant ewes/inseminated ewes) and pregnancy rate (pregnant ewes/treated ewes) were evaluated 35-40 days after insemination using transrectal ultrasonography. In Experiment 1, conception rate was lower (34.5%; P < 0.05) for the 24-hour semen storage group or was similar (42.7%; P > 0.05) for the 12-hour storage group when compared to the control group (50.4%). In Experiment 2, a single TAI at 48 hours after sponge withdrawal resulted in a pregnancy rate similar to AI performed after detection of estrus (34.7% versus 34.7%, respectively). The TAI at 54 hours resulted in the lowest (10.6%; P < 0.05) pregnancy rate and the double TAI (48 and 54 hours) was intermediate (23.4%). Overall results showed that an acceptable conception rate was achieved when AI was performed after detection of estrus using semen stored at 5 °C for 12 hours in a TRIS-based extender. In addition, it is possible to avoid estrus detection by using a single TAI 48 hours after a Short-Term Protocol without affecting pregnancy rate.

Keywords: sheep, chilled semen, TRIS, Merino ewes.