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JOURNAL ARTICLE

Exposure of thawed frozen bull sperm to a synthetic peptide before artificial insemination increases fertility

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We evaluated the effect on fertility of in vitro exposure of thawed frozen bull sperm to synthetic FertPlus peptide prior to artificial insemination (AI). The peptide represented a 60-amino acid sequence within rat prosaposin. Commercial cryopreserved semen was from three Holstein bulls. Onset of estrus in groups of Holstein nulliparous heifers was synchronized via injection of prostaglandin F2-alpha, and heifers were scheduled for AI 8-24 hours after estrus was detected. Semen was thawed, diluted to 2.4 x 10(6) sperm/ml with buffer, and split to provide control and exposed aliquots (0 or 30 microM peptide) that were incubated at 37 degrees C for 10 minutes and then were held at 32 degrees C. The two aliquots of semen then were used on an alternate basis 2-65 minutes later to inseminate females. Each AI (one per female) involved the deposit of approximately 250,000 sperm into each uterine horn. This procedure for AI was used to reduce the pregnancy rate with control semen to below the maximum value for a given bull and to facilitate detection of any beneficial effect of the peptide. For each bull, approximately 32 heifers were inseminated with control semen, and approximately 32 heifers were inseminated with peptide-exposed semen. Pregnancy was evaluated ultrasonically approximately 60 days after AI. After excluding one group of heifers with unusually low fertility, averaged across all animals, a 29% increase in pregnancy rate resulted from exposure of sperm to peptide ($P < 0.04$; one-tailed chi-square test; means were 48 vs. 62%). Pregnancy rates for the three bulls for control and peptide-exposed semen, respectively, were 42 and 62%, 44 and 64%, and 56 and 61%; means in the first two pairs of values tended to differ (P approximately equal to 0.10). These observations should be confirmed with sperm from other bulls used in a more conventional manner. However, with insemination of a limiting number of cryopreserved sperm, brief exposure of the thawed bull sperm to FertPlus peptide appeared to improve fertility dramatically.

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