

THE EFFECT OF DIFFERENT LUBRICANTS ON LONGEVITY OF MOTILITY AND VELOCITY OF STALLION SPERMATOZOA

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Collection of spermatozoa for artificial insemination requires that the stallion be stimulated with an artificial vagina (AV) using proper pressure, temperature and lubrication. However, a detrimental effect of lubricants on sperm function has been widely reported, largely thought due to their often hyperosmotic formulation. Recently, several “non-spermicidal” lubricants have become available for equine reproductive work. This study was done to compare the effect of several of these “non-spermicidal” lubricants on stallion sperm motility over time. For this experiment, extragonadal reserves were stabilized and three ejaculates from five stallions of proven fertility were collected with a Missouri AV lubricated with 5 mL of petroleum vaseline. The number of sperm/mL was determined using a Spermacue and 1 part (v/v) of NFG semen extender was added for every 50×10^6 sperm present. Each ejaculate was then divided five ways and 10% (v/v) of each of four different lubricants was added. A sample with no lubricant was kept as a control. The lubricants evaluated were Priority CareTM (PC, First Priority Elgin, IL, USA); Pre-SeedTM Equine (PEq, INGfertility Valleyford, WA, USA); MiniLubeTM (ML, Minitube Verona, WI, USA) and EquiLubeTM (EL, Boehringer Ingelheim St. Joseph, MO, USA). Evaluation of progressive motility (PM) was performed at 0, 24, 48 and 72 h by two experienced individuals blinded to treatments. After the 0 h evaluation, semen treatments were placed into a cooling container (Equitainer) for storage. Aliquots were brought to body temperature for motility determination. Analysis (two-way ANOVA) revealed significant treatment effect over time and by treatment. There were no significant differences between any treatments and control sperm at 0 h, with PM ranging from 73% to 79%. PM data are presented as mean $\pm$ S.D. However, by 24 h of storage, sperm motility was decreased ($P < 0.001$) in the PC ($28 \pm 8\%$), ML ($54 \pm 16\%$) and EL ($39 \pm 19\%$) treatments, as compared to sperm motility seen in the control ($64 \pm 11\%$). Motility of sperm in PEq ($61 \pm 12\%$) did not differ from that in controls at 24 h. Likewise, at 48 h, sperm motility was decreased ($P < 0.001$) in the PC, ML and EL

treatments as compared to the control treatments, whereas motility in the PEq did not differ from that of the control. By 72 h, sperm motility had decreased in all treatments from that seen in the control ($39 \pm 12\%$; $P < 0.01$). However, sperm motility in the PC ($8 \pm 7\%$) and EL ($11 \pm 14\%$) treatments had decreased more ($P < 0.05$) than that seen with PEq ($20 \pm 15\%$) and ML ($18 \pm 12\%$). We inferred that stallion sperm motility was affected by even “non-spermicidal” lubricants. This effect could not be attributed solely to osmolality (mOsmo/kg) of the lubricants (i.e. EL 368; PC 2199; PEq 328; ML 336), as 10% EL, PC and ML caused declines in sperm motility at 24 and 48 h, even though only the PC was hyperosmotic. The detrimental effect of these lubricants was not evident immediately (0 h), although it did occur thereafter. PEq caused the least sperm damage, with motility consistent to the control throughout the first 48 h of storage.

Keywords: Stallion; Semen; Motility; Lubricants; Artificial insemination

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PERTURBATIONS IN MACROPHAGE INFLAMMATORY CYTOKINE mRNA EXPRESSION IN MARES EXPOSED TO ENDOPHYTE-INFECTED TALL FESCUE PASTURES

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Tall fescue is a cool season forage grown extensively in the southeast United States, but $>75\%$ of pastures are infected by the endophyte *Neotyphodium coenophialum*, resulting in the presence of ergot alkaloids (EA) known to be toxic to mares in late gestation. However, the mechanism of action of EA toxicity on the estrous cycle, early embryonic and fetal development and survival in horses is less well understood. This study investigated whether inappropriate expression of maternal inflammatory cytokines is associated with poor reproductive performance observed in mares