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The effects of antibiotic type and extender storage method on sperm quality and antibacterial effectiveness in fresh and cooled-stored stallion semen

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1 **The effects of antibiotic type and extender storage method on sperm quality**
2 **and antibacterial effectiveness in fresh and cooled-stored stallion semen**

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15 **Abstract**

16 Two experiments were conducted to evaluate the effects of antibiotic-containing extender
17 of on sperm quality and control of bacterial growth. In Experiment 1, ejaculates were diluted in
18 extender containing no antibiotics, potassium penicillin G-amikacin disulfate (PEN-AMIK),
19 ticarcillin disodium-potassium clavulanate (TICAR-CLAV), piperacillin sodium/tazobactam
20 sodium (PIP-TAZ), or meropenem (MERO). In freshly extended semen, only slight differences
21 were detected among some antibiotic treatments for total sperm motility, curvilinear velocity,
22 and viable acrosome-intact sperm ($P < 0.05$). In cool-stored semen, slight differences were also
23 detected among certain antibiotic treatments for curvilinear velocity and chromatin integrity ($P <$
24 0.05). In Experiment 2, ejaculates were diluted in extender and subjected to no bacterial spiking,
25 or inoculated with lower or higher doses of *K. pneumoniae* or *P. aeruginosa*. Following cooled
26 storage of semen, colony forming units/ml (CFU/mL) were less in PEN-AMIK (706 ± 244) and
27 MERO (1576 ± 1076) treatment groups than in TICAR-CLAV (4678 ± 1388) or PIP-TAZ (8108
28 ± 3198) treatment groups ($P < 0.05$). The CFU/mL were lower in all antibiotic-containing
29 treatment groups than the control group (18478 ± 4374 ; $P < 0.05$). The percentage of culture

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