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Seminal features of buffalos supplemented with rations based on coconut meal or palm kernel cake

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Introduction

Modern animal production requires biotechnical solutions to increase animal performance, and profitable alternatives that conjoin economic gains and environmental protection. Some agrindustrial byproducts are largely available in the Eastern Amazon, such as the residues of coconut (*Cocos nucifera*) and palm oil (*Elaeis guineensis* Jacq.) processing, which have potential to be incorporated in animal nutrition. Thus, the objective of this work was to compare the seminal features of buffaloes supplemented with conventional concentrate and concentrates based on coconut meal or palm kernel cake.

Material and Methods

Fifteen buffaloes (3.2±1.3 years, 578.6±101.9 kg) raised on pasture (*Panicum maximum*) at Embrapa Eastern Amazon were daily supplemented with isoproteic concentrates (1% BW) during 252 days, into three groups: Control (n=5; conventional concentrated for buffaloes in termination), CM-Base (n=5; ration with coconut meal base) and PKC-Base (n=5; ration with palm kernel cake base). The daily consumption of concentrates was individually calculated (kg) immediately after ingestion. Semen samples were collected weekly (173 samples). Evaluation considered the semen volume (mL), pH, mass activity (0-5), spermatic vigor (0-5), progressive sperm motility (%), integrity of spermatozoa plasma membrane (%) and sperm morphology (%), as CBRA (1) and (2). Data were submitted to analysis of variance and means were compared by t Test ($P<0.05$), using SAS statistical software (3).

Results and Discussion

The average consumption of concentrates was 4.778±1.233 kg in Control, 3.112 ± 0.693 kg in CM-Base and 4.558±1.077 kg in PKC-Base ($P>0.05$). The semen volume (Control=6.9±0.4, CM-Base=7.0±0.6 and PKC-Base=6.8±0.5), the mass activity (Control=2.9±1.9, CM-Base=3.4±1.8 and PKC-Base=3.1±1.5), the spermatic vigor (Control=3.6±1.0, CM-Base=3.7±1.1 and PKC-Base=3.9±1.0) did not differ ($P>0.05$). The pH of the ejaculates ranged from 6 to 8, but it did not differ (Control=6.9±0.4, CM-Base=7.0±0.6 and PKC-Base=6.8±0.5, $P>0.05$). Sperm concentration of Control (1326.3±893.8) did not differ of CM-Base (1698.1±1023.0) and PKC-Base (1003.2±569.0). The plasma membrane integrity was 68.0±19.5, 72.0±22.6 and 82.1±12.2 for Control, CM-Base and Base-PKC, respectively ($P<0.05$). Similarly, motility was higher ($P<0.05$) in PKC-Base (71.7±15.1) when compared to Control (59.3±20.5) and CM-Base (56 7 ± 24.8). The motility of the PKC-Base is in accordance to the variation from 70 and 80%, presented in excellent buffalos ejaculated (4). The rate of major defects (Control=29.6±18.9, CM-Base=27.8±15.3 and PKC-Base=30.1±21.4), the minor defects (Control=14.6±7.8, CM-Base=13.8±7.1 and PKC-Base=14.0±7.6) and the total defects (Control=44.2±18.5; CM-Base=41.3±16.1 and PKC-Base=44.3±19.2) did not differ ($P>0.05$). These results allows us infer that any increases in defects are not related to the addition of coconut meal and palm kernel cake in the diet. Buffaloes fed with PKC-Base ration showed a better nutrient use of experimental concentrates, which improved the sperm quality, especially in relation to higher motility and higher levels of sperm with plasma membrane integrity. Therefore, the palm kernel cake and coconut meal may be indicated for using in the buffalo bulls' diet, without compromising their sperm quality. Positive effects of palm kernel cake use were observed on two relevant seminal parameters for fertility.

References:

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