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JITHATHAI JONGJIT : SEMEN ANALYSIS AND ACROSOME REACTION IN CATTLE AND SWAMP BUFFALOES : COMPARISON BETWEEN SWIM-UP AND PERCOLL GRADIENT CENTRIFUGATION. THESIS ADVISORS : KANOK PAVASUITHIPAISIT, MD.,Ph.D., REON SOMANA, MD.,Ph.D., YINDEE KITIYANANT, D.V.M.,M.Sc., PRAPEE SRETARUGSA, Ph.D., SANGCHAI PREUTTHIPAN, M.D. 78 p. ISBN 974-663-578-6

Swim-up and Percoll gradient centrifugation are two most commonly used methods for sperm recovery in assisted reproductive laboratories. The superiority of sperm obtained from the two methods are inconclusive. Therefore, the objective of this study was to compare the effectiveness of these two methods of sperm preparation from cattle and swamp buffalo semen. The assayed parameters were concentration, motility, normal morphology and acrosome reaction. Semen samples were obtained from a single cattle and a single swamp buffalo. The samples were divided into two equal parts. The first part was prepared by a swim-up method whereas the other was prepared by a Percoll gradient centrifugation. In both species, the swim up method was significantly superior than Percoll gradient centrifugation superior in the percentage of motility (cattle: 94.96 vs 76.88 ; swamp buffaloes 95.75 vs 75.02) and normal morphology (cattle: 72 vs 70.60 ; swamp buffalo 77.49 vs 74.91). Whereas, the latter procedure yielded higher sperm concentration in cattle (3.67 vs 6.03) but not in swamp buffaloes (7.14 vs 6.98). However there was no significant difference in the means of grading motility between the two procedures in both species (cattle 3.9 vs 3.87 ; swamp buffalo 3.84 vs 3.8). Acrosomal status was investigated after being treated with heparin and stained by FITC-PNA. A significant correlation between the percentage of acrosome reaction and duration of incubation was found. The magnitude of the increment of acrosome reaction was significantly higher in cattle than that in swamp buffaloes from both preparation methods.

The present studies indicated that both cattle and swamp buffalo spermatozoa separated by swim up and Percoll gradient centrifugation procedures increase in the percentage of motility, normal morphology and grading motility comparing to initial semen samples. The percentage of motility and normal morphology except sperm concentration were better in the swim up method than those in Percoll gradient centrifugation. Moreover, heparin incubation caused a significant increase of sperm acrosome reaction in which the magnitude was higher in cattle than swamp buffaloes. Acrosome reaction in both species was clearly demonstrated by the FITC-PNA method.