CENTRAL LUZON STATE UNIVERSITY

VIABILITY EVALUATION OF EXTENDED POST-MORTEM GOAT EPIDIDYMAL SPERMATOZOA STORED AT REFRIGERATED CONDITION

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An Undergraduate Thesis Submitted to the Faculty of the Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz, Nueva Ecija Philippines, In Partial Fulfillment of the Requirements for the Degree

BACHELOR OF SCIENCE IN BIOLOGY

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COLLEGE OF ARTS AND SCIENCES
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"I can do all things through Christ who strengthens me"

-Philippians 4:13

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ABSTRACT

TOMAS, JULIUS V. Bachelor of Science in Biology, Department of Biological Sciences, College of Arts and Sciences, Central Luzon State University, Science City of Munoz, Nueva Ecija, Philippines, June 2017. **VIABILITY EVALUATION OF EXTENDED POST-MORTEM GOAT EPIDIDYMAL SPERM STORED AT REFRIGERATED CONDITION.**

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The study was conducted to assess the viability of postmortem goat epididymal spermatozoa (EPS) recovered immediately in Tris-citric acid-lactose-raffinose (TCLR) buffer solution and transported at ambient temperature in the laboratory. Specific sperm quality parameters such as initial motility, sperm concentration, morphology (live/dead and normal/abnormal), pellet volume and pH of the buffer solution were determined. The pelletized epididymal sperm were diluted in TCLR with 20% egg yolk (v/v) and 7% glycerol (v/v) and stored in a refrigerator. The processed sperm were observed every 12 hours for sperm motility assessed by conventional method and computer assisted sperm analyzer (CASA) equipment. Representative samples were smear-stained to determine sperm livability and sperm morphology.

The recovered epididymal spermatozoa obtained a mean sperm concentration value of 339 ± 83.5 and volume of (0.71 ± 0.08). There was a significant decline

($p<0.05$) in sperm motility from the time it was immediately recovered (50.6 ± 5.14), after it was processed 12 hpm (18.1 ± 5.66) and 24 hpm (5.94 ± 1.19) of storage in the refrigerator.. Similar observations of the total motility (CASA-MOT) and progressive motility (CASA-PMOT) values by CASA evaluation declined ($p<0.05$) considerably after 12 hpm (CASA-MOT-12.05±6.20, CASA-PMOT-5.64±3.50) and 24 hpm (CASA-MOT-7.02±7.57, CASA-PMOT-2.43±2.69) as compared with the freshly recovered sperm at 0 hpm (CASA-MOT-45.98±8.34, CASA-PMOT-20.84±4.99).

Microscopic observations of live and dead epididymal spermatozoa registered significantly different mean values ($p<0.05$) that were inversely proportionally with each other at 0hpm (live-74.10±5.39, dead-25.51±5.42), 12hpm (live-45.09±9.69, dead-54.11±10.04) and 24hpm (live-9.45±8.37, dead-90.56±8.37). The proportion of normal spermatozoa significantly ($p<0.05$) declined over time at 0 hpm (67.15 ± 4.14), 12 hpm (48.58 ± 11.37) and 24 hpm (9.04 ± 8.08). The incidence of sperm abnormalities significantly increased ($p<0.05$) in number as the storage time at 0-5℃ was prolonged (0 hpm: 32.79±4.15), (12 hpm: 51.69±10.99) and (24 hpm: 90.96 ± 8.08). Similar observation for the CASA abnormal epididymal spermatozoa considerably increased ($p<0.05$) upon reaching 12 hpm (96.33±2.03) and 24 hpm (97.46±2.32) of refrigerated storage condition. Some sperm abnormalities noted include cytoplasmic droplets (distal and proximal), bent tails, bent midpiece, coiled tail, large head, micro head, dag-like defect, distal reflex and detached head. Cytoplasmic droplets ranked the highest in both CASA and conventional methods of evaluation for sperm abnormality.

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