

Study on Use of Bee Honey as the Energy Source for Synthesis of Goat Semen Extender

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Goat semen cryopreservation crucially conserves genetic resources for animal breeding programs. This study focuses into the investigation utilization of bee honey as a potential energy source in this process, aiming to assess its impact on sperm motility and viability over time. The main objective of this study is to investigate the effectiveness of bee honey as a natural energy source in goat semen cryopreservation, specifically examining its influence on sperm motility and viability. Five samples were obtained from sexually matured, fertile Saanen male goat via electro-ejaculation. Initial analyses of fresh semen samples included physical and microscopic evaluations. Various concentrations of bee honey (3%, 3.5%, 4%, and 5%) were tested alongside a fructose control group. The semen was then processed, diluted with extender, chilled. Extended semen was chilled at 4°C for 2.5 hours, then processed semen was again diluted with the appropriate extender until they reached the necessary final volume and loaded into 0.25 ml French mini straws, and cryopreserved in liquid nitrogen at -196°C. Sperm quality parameters sperm motility and sperm viability via eosin nigrosine staining technique were assessed pre-freezing, post-chilling, and at various intervals post-thawing. The goat semen viability was founded to be dependent on the concentration of bee honey in the tris-egg yolk extender. The live-dead ratio of goat semen which was assessed gave high values for 3% ,3.5% while 4% and 5% groups low values with comparison to the control group. This study demonstrates the potential of bee honey as a cryo-protective agent in goat semen cryopreservation. Tris-egg yolk extenders supplemented with 3% and 3.5% bee honey showed improved post-thaw semen quality parameters compared to the control. These findings contribute to the advancement of techniques for preserving goat genetic resources and have implications for animal breeding programs.

Keywords: Goat, cryopreservation of semen, tris- egg yolk-based extender, bee honey, sperm viability