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Specific-Protein Sperm Membrane Supplementation on Freezing Medium Maintain Post-Thawed Bull Sperm Quality

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Abstract : Based on previous study, plasma membrane protein of spermatozoa weighed around 55 kDa was found in fertile *Friesian Holstein* bull. Observation on the semen of 8 bulls indicated that higher specific protein sperm membrane weighed 55 kDasuggested as significant marker of fertility. Detrimental effects caused by cryopreservation have been widely studied. Therefore, it needs to be added into the semen diluter in order to improve the semen quality. The objective of this research was to describe the mechanism of male cattle fertility improvement through the addition of specific protein into spermatozoa stored in freezing medium to increase the numbers of offspring which resulting the rapid improvement of dairy cattle population in Indonesia. To achieve this goal, sequences of gradual researches was conducted. The first phase consist of biochemistry characterization of specific protein sperm membrane in isolated bull spermatozoa and seminal plasma which involved specific protein sperm membrane expression in bull semen using specific protein sperm membrane 55 kDa monochlonal antibody and determining the weight of specific protein sperm membrane molecule using SDS-PAGE method which was then confirmed by Western blot. Receptor binding test based on immunohistochemistry and specific protein sperm membrane activity test to determine the optimum condition of isolated bull semen were also conducted.
The second research consist of laboratory and field test involving sequences method to measure the quality of frozen semen with specific protein sperm membrane addition from isolated bull semen including determining standard additional protein dose using ELISA method, determining optimum dose of specific protein sperm membrane should be added into freezing medium and examining the effect of protein addition on the qualities of spermatozoa after thawing, including motility, viability, plasma membrane integrity, dizziness, in vitro fertility, and in vivo fertility.
Keywords : bull semen, specific protein sperm membrane, freezing medium, semen quality, fertilization.

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