ABSTRACT

Potency of Fertility Associated Antigen in Bull's Seminal Plasma to Increase Fertility in Frozen Semen of Simmental Bull

Tri Wahyu Suprayogi

Fertility Associated Antigen (FAA) is a specific protein produced by the accessory sex glands of the male reproductive organs of bull and secreted in the semen. FAA serves to stabilize membranes and accelerate the capacitation of spermatozoa after ejaculated into the female reproductive tract, resulting in improving fertility of spermatozoa. The research objective was to identify, isolate and specificity of FAA from bovine seminal plasma, as well as their potential increased of fertility of frozen semen. The results of screening 15 bulls was only 8 out of them containing the FAA with semen levels 101; 100.4; 36.8; 47.3; 46.4; 36.5; 47.6 and 46.7 ug / ml. Based on manova test, administration of FAA significantly ($p<0.05$), increase viability, motility, and intact plasma membrane, as well as in vitro fertilization, and a decrease in intracellular Ca^{2+} influx, capacitation, and acrosome reaction of spermatozoa post thawing, when compared with no FAA. Based on linear regression found plasma membrane intact effect ($p<0.05$) on intracellular Ca^{2+} influx ($\beta = -0.415$). Plasma membrane intact and intracellular Ca^{2+} influx together effect ($p<0.05$) on viability. Viability effect ($p<0.05$) on motility ($\beta = 0.957$), capacitation ($\beta = -0.384$) and the acrosome reaction ($\beta = -0.270$). Motility, capacitation and acrosome reaction together effect ($p<0.05$) for in vitro fertilization. The administration of FAA of bovine seminal plasma into the freezing bovine semen for in vitro fertilization increased by increasing membrane stability and regulate intracellular Ca^{2+} influx decreased. Membrane integrity activity affects the viability of spermatozoa that can be known from the indicator motility, capacitation and acrosome reaction. Motility, capacitation and acrosome reaction simultaneously affect the increased in vitro fertilization, but capacitation plays an important role for fertilization.

Keywords: Bull, seminal plasma, fertility, FAA, frozen semen quality