SUPLEMENTASI SELENIUM UNTUK MENINGKATKAN KUALITAS *FROZEN-THAWED SEMEN* SAPI ACEH

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INTISARI

Perubahan suhu yang drastis selama proses pembekuan dan *thawing* semen beku menyebabkan stress oksidatif. Selenium sebagai antioksidan berpotensi menangkal efek buruk dari radikal bebas tersebut. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan selenium terhadap kualitas *frozen-thawed semen* pada sapi Aceh. Penelitian ini dilaksanakan pada bulan Juli sampai Desember tahun 2024 di Laboratorium Fisiologi dan Reproduksi Ternak Fakultas Peternakan Universitas Gadjah Mada. Penelitian ini menggunakan 30 *straw semen* beku sapi Aceh yang diproduksi oleh Balai Besar Inseminasi Buatan (BBIB) Singosari. *Semen* beku di-*thawing* pada suhu 37°C selama 30 detik, selenium ditambahkan pada masing masing *semen post-thawing* dengan level yang berbeda yaitu; tanpa penambahan selenium (P0), penambahan selenium 1 ppm (P1), penambahan selenium 5 ppm (P2), penambahan selenium 25 ppm (P3), dan penambahan selenium 50 ppm (P4). Masing masing level perlakuan dilakukan sebanyak tiga kali. Parameter yang diamati meliputi motilitas, viabilitas, abnormalitas, integritas membran plasma, dan integritas tudung akrosom spermatozoa. Data yang diperoleh dianalisis pada masing masing perlakuan waktu menggunakan uji statistik ANOVA pola searah, dilanjutkan dengan uji *Duncan Multiple Range Test* (DMRT). Hasil penelitian menunjukkan bahwa penambahan selenium 5 ppm berpengaruh nyata ($P<0,05$) terhadap peningkatan motilitas dan viabilitas, namun pada dosis 50 ppm menurunkan motilitas dan viabilitas. Penambahan selenium pada semua perlakuan tidak berpengaruh nyata ($P>0,05$) terhadap abnormalitas, integritas membran plasma dan tudung akrosom. Dapat disimpulkan bahwa penambahan selenium berpengaruh terhadap motilitas dan viabilitas, namun tidak berpengaruh nyata terhadap abnormalitas, integritas membran plasma dan tudung akrosom. Sumplementasi selenium 5 ppm memberikan hasil terbaik terhadap motilitas dan viabilitas *semen post-thawing* sapi Aceh.

Kata kunci: Sapi Aceh, *Semen* beku, Selenium, Kualitas *Frozen-thawed semen*

SELENIUM SUPPLEMENTATION TO IMPROVE THE QUALITY OF FROZEN-THAWED SEMEN OF ACEH CATTLE

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ABSTRACT

Drastic temperature changes during the freezing and thawing of frozen semen can induce oxidative stress. As an antioxidant, selenium has the ability to counteract the adverse effects of these free radicals. The aim of this research was to observe the effect of adding selenium on the quality of frozen Aceh cattle semen after thawing. The research was conducted from July to December 2024 at the Physiology and Reproduction Laboratory, Faculty of Animal Sciences, UGM. A total of 30 semen straws were obtained from Artificial Insemination Centre in Singosari, Malang, East Java. The frozen semen was thawed at 37°C for 30 seconds, and selenium was added to each straw with different levels including: without the addition of selenium (P0), addition of 1 ppm selenium (P1), addition of 5 ppm selenium (P2), addition of 25 ppm selenium (P3), and addition of 50 ppm selenium (P4). Each treatment performed in triplicate. Parameters observed included motility, viability, abnormality, plasma membrane integrity, and acrosome integrity of sperm. The data obtained were analysized statistically using the One-Way analysis of variance (ANOVA) Duncan Multiple Range Test (DMRT) with assistance of the IBM SPSS 27 software. The results showed that the addition of 5 ppm selenium has a significant effect ($P<0.05$) on motility and viability, but at a dose of 50 ppm, it reduces motility and viability. The addition of selenium in all treatments does not have a significant effect ($P>0.05$) on abnormalities, plasma membrane integrity, and acrosome. It can be concluded that selenium supplementation affects motility and viability, but does not significantly affect abnormalities, plasma membrane integrity, and the acrosome. While no effect on sperma abnormality. Among the tested level, 5 ppm Selenium supplementation yielded the most optional results.

Keywords: Aceh cattle, Frozen semen, Selenium, Frozen-thawed semen quality.