

PENGARUH PEJANTAN DAN MEDIUM EKSTENDER DENGAN PENAMBAHAN ANTIOKSIDAN α -TOCOPHEROL PADA KRIOPRESERVASI SPERMA TERHADAP TINGKAT KEBERHASILAN INSEMINASI BUATAN PADA SAPI YANG DISINKRONISASI ESTRUS

INTISARI

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Penelitian ini bertujuan untuk mengetahui pengaruh pejantan dan medium ekstender dengan penambahan antioksidan α -Tocopherol pada kriopreservasi sperma terhadap tingkat keberhasilan inseminasi buatan pada sapi yang disinkronisasi. Penelitian ini terdiri dari 2 pejantan (PO dan brahman) dan medium ekstender (skim kuning telur (SKT) + standard dan SKT+ α -Tocopherol). Hasil kriopreservasi sperma diaplikasikan pada kelompok peternak dengan perlakuan 20 ekor sapi PO betina dengan BCS antara 2,5 – 3 yang telah disinkronisasi estrus dengan implan CIDR selama 13 hari dan diinjeksi hormon GnRH setelah pelepasan CIDR, kemudian dilakukan *timed artificial insemination*. Sampel darah disentrifuge pada kecepatan 3000 rpm selama 10 menit dan dianalisis menggunakan metode ELISA, untuk mengetahui kadar hormon progesteron terhadap angka kebuntingan. Parameter yang diamati meliputi: kualitas sperma beku (motilitas, viabilitas, abnormalitas, integritas membran) dan tingkat keberhasilan IB (*service per conception*, /S/C, *non-return rate*, /NRR dan *conception rate*, /CR). Rancangan percobaan yang digunakan adalah faktorial pola 2 x 2, sebagai faktor A pejantan dan B ekstender. Hasil penelitian menunjukkan bahwa pejantan berpengaruh tidak nyata terhadap kualitas sperma beku, sedangkan hasil analisis variansi medium ekstender menunjukkan perbedaan yang nyata ($P \leq 0,05$) antara medium ekstender SKT + STD dengan SKT + α -Tocopherol terhadap rata-rata motilitas, viabilitas dan integritas membran spermatozoa dan berbeda tidak nyata terhadap abnormalitas spermatozoa. Tidak terdapat interaksi antara pejantan dan medium ekstender terhadap kualitas sperma beku spermatozoa. Medium ekstender SKT+ α -Tocopherol menunjukkan hasil yang terbaik, masing-masing dengan rata-rata motilitas $49,77 \pm 1,08\%$, rata-rata viabilitas $54,77 \pm 0,62\%$, rata-rata integritas membran $47,40 \pm 1,32\%$. Hasil penelitian juga menunjukkan bahwa semua ternak menunjukkan gejala estrus 60 – 100% setelah pelepasan CIDR. Profil hormon progesteron dari 20 ekor sapi diperoleh 9 ekor yang bunting dengan kadar progesteron pada hari ke-21 setelah di IB masing-masing 19,46 ng/ml, 10,07 ng/ml, 16,45 ng/ml, 6,81 ng/ml, 5,25 ng/ml, 12,57 ng/ml, 10,48 ng/ml, 10,44 ng/ml dan 5,09 ng/ml. Sedangkan 11 ekor lagi tidak bunting karena kadar progesteron yang dihasilkan < 3 ng/ml pada hari ke-21. Disimpulkan bahwa penggunaan ekstender SKT + α -Tocopherol menghasilkan tingkat motilitas, viabilitas, dan integritas membran spermatozoa terbaik. Kebuntingan dengan sperma beku PO + α -Tocopherol memberikan hasil S/C $1,82 \pm 0,63$ kali, NRR 80%, dan CR 60% lebih bagus dibandingkan perlakuan lain. Sapi Brahman dengan dan tanpa penambahan antioksidan α -Tocopherol memperoleh hasil yang sama terhadap tingkat keberhasilan IB.

Kata kunci: α -Tocopherol, Conception rate, Kriopreservasi sperma, Non-Return rate, Pejantan, Service per conception.

THE EFFECT OF BULL AND EXTENDER MEDIUM WITH THE ADDITION
α-TOCOPHEROL ANTIOXIDANT TO SEMEN CRYOPRESERVATION
ON THE LEVEL SUCCESS ARTIFICIAL INSEMINATION
OF COW ESTROUS SYNCHRONIZED

ABSTRACT

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This study aimed to determine the effect of bulls and extender medium with the addition of *α-Tocopherol* antioxidant in cryopreservation of semen on the level success artificial insemination of cow synchronized. A total of 2 bulls (OG/Ongole grade and brahman) and extender medium (egg yolk skim/EYS + standard and EYS + *α-Tocopherol*) were employed. The result of cryopreservation of semen was applied to the breeder group with the treatment of 20 OG cows with BCS ranged 2.5 – 3 that had been synchronized estrous with CIDR implant for 13 days. The cows were injected with GnRH hormone after CIDR release, and then performed the timed artificial insemination. Blood samples were centrifuged at 3000 rpm for 10 min and were analyzed using ELISA method to determine the levels of progesterone hormone on pregnancy. Parameters observed included: frozen semen quality (motility, viability, abnormality, membrane integrity) and success of AI results (*service per conception*, / S/C), *non-return rate*, / NRR) and *conception rate*, / CR). The treatments were in 2 x 2 factorial in a Completely Randomized Design (CRD) with bull as factor A and extender medium as factor B. The results showed that bulls had no significant effect on the quality of frozen semen, while the results of variance analysis of extender medium showed a significant difference ($P \leq 0.05$) between EYS + STD and EYS + *α-Tocopherol* extender medium on the mean of motility, viability and membrane integrity. However, the results was not significantly difference on spermatozoa abnormality. There was no interaction between the bulls and extender medium on frozen semen quality. Extender medium EYS + *α-Tocopherol* showed the best result with the average motility of $49.77 \pm 1.08\%$, viability of $54.77 \pm 0.62\%$, and $47.40 \pm 1.32\%$ membrane integrity. The results also showed that all animals showed symptoms of estrous at 60 – 100% after CIDR release. The progesterone hormone profiles of those 20 OG cows was obtained by 9 pregnant cows with progesterone levels on 21-d after in each AI were 19.46 ng/ml, 10.07 ng/ml, 16.45 ng/ml, 6.81 ng/ml, 5.25 ng/ml, 12.57 ng/ml, 10.48 ng/ml, 10.44 ng/ml and 5.09 ng/ml. The other 11 were presumed not pregnant because the progesterone levels produced <3 ng/ml on 21-days. It was concluded that the use of the EYS + *α-Tocopherol* extender medium resulted in the best motility, viability, and membrane integrity of the spermatozoa. Cows pregnancy with frozen semen OG + *α-Tocopherol* resulted in S/C of 1.82 ± 0.63 , NRR at 80%, and CR at 60%, better than other treatments. Brahman bull semen with and without the addition of *α-Tocopherol* antioxidants obtained similar results on AI success rates.

Keywords: Bull, *α-Tocopherol*, Conception rate, Semen cryopreservation, Non-return rate, Service per conception.