

PENGARUH SUPLEMENTASI AIR KELAPA DAN AIR BUAH LONTAR PADA
PENGENCER TRIS KUNING TELUR TERHADAP KUALITAS SEMEN POST -
THAWING SAPI PERANAKAN ONGOLE

INTISARI

Era Sevidiana Khuduluvi
24/550502/PPT/01374

Proses kriopreservasi semen dapat meningkatkan pembentukan *reactive oxygen species* yang menyebabkan stres oksidatif sehingga menurunkan kualitas spermatozoa. Penambahan antioksidan alami, seperti air kelapa dan air buah lontar, berpotensi melindungi spermatozoa dari kerusakan selama proses kriopreservasi. Penelitian ini bertujuan untuk mengevaluasi pengaruh suplementasi air kelapa dan air buah lontar dalam pengencer tris–kuning telur terhadap kualitas semen sapi Peranakan Ongole (PO) pasca-*thawing*. Semen dikoleksi dari seekor Sapi Peranakan Ongole menggunakan vagina buatan, dua kali setiap minggu selama dua minggu. Semen segar yang memenuhi kriteria, diencerkan menggunakan pengencer tris–kuning telur, kemudian dibagi menjadi kelompok kontrol tanpa suplementasi serta kelompok perlakuan yang diberi suplementasi air kelapa dan air buah lontar masing-masing pada konsentrasi 0,5%, 1%, dan 2%. Parameter yang diamati meliputi motilitas, viabilitas, abnormalitas, integritas membran plasma, dan keutuhan tudung akrosom spermatozoa. Data dianalisis menggunakan One-Way ANOVA. Hasil penelitian menunjukkan bahwa suplementasi air kelapa maupun air buah lontar mampu mempertahankan kualitas semen beku sapi PO lebih baik dibandingkan kelompok kontrol ($P < 0,05$). Pada kelompok air kelapa, penambahan 1% memberikan hasil terbaik, dengan motilitas $59,28 \pm 5,18\%$, viabilitas $82,67 \pm 1,84\%$, abnormalitas $6,92 \pm 0,70\%$, integritas membran plasma $89,17 \pm 2,72\%$, dan keutuhan tudung akrosom $66,58 \pm 1,46\%$. Nilai tersebut lebih baik dibandingkan kontrol yang hanya menghasilkan motilitas $54,12 \pm 4,40\%$, viabilitas $79,38 \pm 2,23\%$, abnormalitas $8,58 \pm 0,87\%$, integritas membran plasma $86,00 \pm 2,98\%$, dan keutuhan tudung akrosom $55,25 \pm 1,80\%$. Sementara itu, suplementasi 1% air buah lontar memberikan hasil terbaik di antara seluruh perlakuan, dengan motilitas $59,53 \pm 4,28\%$, viabilitas $83,63 \pm 1,87\%$, abnormalitas $6,42 \pm 0,70\%$, integritas membran plasma $90,17 \pm 2,72\%$, dan keutuhan tudung akrosom $69,58 \pm 1,36\%$. Dapat disimpulkan bahwa suplementasi air kelapa dan air buah lontar dalam pengencer tris–kuning telur mampu meningkatkan kualitas semen beku sapi Peranakan Ongole pasca-*thawing*, dengan perlakuan 1% air buah lontar memberikan hasil terbaik.

Kata kunci: Air Buah Lontar, Air Kelapa, Kriopreservasi, Sapi PO, Semen Beku

EFFECTS OF COCONUT WATER AND PALMYRA PALM FRUIT WATER SUPPLEMENTATION IN TRIS EGG YOLK EXTENDER ON POST-THAW SEMEN QUALITY OF ONGOLE GRADE BULL

ABSTRACT

Era Sevidiana Khuduluvu
24/550502/PPT/01374

Semen cryopreservation increases the production of reactive oxygen species, leading to oxidative stress and reduced sperm quality. The addition of natural antioxidants, such as coconut water and palmyra palm fruit water, may help protect spermatozoa from oxidative damage during the freezing process. This study aimed to evaluate the effects of coconut water and palmyra palm (*Borassus flabellifer*) fruit water supplementation in a Tris–egg yolk extender on the post-thaw quality of Ongole Grade (PO) bull semen. Semen was collected from one Ongole Grade bull using an artificial vagina twice weekly for two weeks. Fresh ejaculates that met the quality standards were diluted in a Tris–egg yolk extender and allocated into a control group (without supplementation) and six treatment groups supplemented with coconut water or palmyra palm fruit water at concentrations of 0.5%, 1%, and 2%. The evaluated parameters included sperm motility, viability, abnormality, plasma membrane integrity, and acrosome integrity. Data were analyzed using one-way analysis of variance (ANOVA). Both coconut water and palmyra palm fruit water significantly improved post-thaw semen quality compared with the control group ($P < 0.05$). Among the coconut water treatments, supplementation at 1% produced the best results, with sperm motility of $59.28 \pm 5.18\%$, viability of $82.67 \pm 1.84\%$, abnormality of $6.92 \pm 0.70\%$, plasma membrane integrity of $89.17 \pm 2.72\%$, and acrosome integrity of $66.58 \pm 1.46\%$. These values were superior to those of the control group, which showed motility of $54.12 \pm 4.40\%$, viability of $79.38 \pm 2.23\%$, abnormality of $8.58 \pm 0.87\%$, plasma membrane integrity of $86.00 \pm 2.98\%$, and acrosome integrity of $55.25 \pm 1.80\%$. The highest post-thaw sperm quality among all treatments was obtained with 1% palmyra palm fruit water supplementation, resulting in motility of $59.53 \pm 4.28\%$, viability of $83.63 \pm 1.87\%$, abnormality of $6.42 \pm 0.70\%$, plasma membrane integrity of $90.17 \pm 2.72\%$, and acrosome integrity of $69.58 \pm 1.36\%$. It can be concluded that supplementation of coconut water and palmyra palm fruit water in a Tris–egg yolk extender improved the post-thaw quality of Ongole Grade bull frozen semen, with 1% palmyra palm fruit water supplementation producing the best results.

Keywords: Coconut water, Cryopreservation, Frozen semen, Palmyra palm fruit water, PO cattle