

PENGARUH KONSENTRASI MEDIUM PUTIH TELUR YANG BERBEDA PADA PEMISAHAN SPERMATOZOA TERHADAP KUALITAS DAN PROPORSI SPERMATOZOA X DAN Y KAMBING SAANEN

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INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh konsentrasi medium putih telur yang berbeda pada pemisahan spermatozoa terhadap kualitas dan proporsi spermatozoa X dan Y kambing Saanen pada fraksi atas dan fraksi bawah setiap medium yang berbeda: 1) P0 = sperma tanpa konsentrasi putih telur (kontrol); 2) P1 = konsentrasi 10% + 30%; 3) P2 = konsentrasi 15% + 45%; 4) P3 = konsentrasi 25% + 75%. Semen segar kambing Saanen jantan berumur 3 tahun dikoleksi menggunakan vagina buatan, dilakukan penilaian secara makroskopis (volume, pH, warna, bau, konsistensi), serta mikroskopis (motilitas, viabilitas, abnormalitas). Data rerata kualitas berupa motilitas, viabilitas, dan abnormalitas pasca pemisahan; dan rerata proporsi spermatozoa X dan Y berdasarkan panjang \times lebar kepala dianalisis variansi data Rancangan Acak Lengkap (RAL) Pola Searah, kemudian dilanjutkan uji *Duncan's Multiple Range Test* (DMRT) untuk data perbedaan yang nyata. Hasil analisis menunjukkan pemisahan dengan konsentrasi medium putih telur berpengaruh nyata meningkatkan proporsi spermatozoa X lapisan atas dan meningkatkan proporsi spermatozoa Y lapisan bawah ($P < 0,05$). Namun, cenderung menurunkan motilitas dan viabilitas spermatozoa, serta meningkatkan abnormalitas spermatozoa. Proporsi spermatozoa X dan Y tertinggi terdapat perlakuan P2 (fa 15%; fb 45%), diperoleh 78,40 \pm 5,5% spermatozoa X (fa); 21,60 \pm 5,5% spermatozoa Y (fa) serta 18,40 \pm 5,5% spermatozoa X (fb); 81,60 \pm 5,5% spermatozoa Y (fb); rerata motilitas 36,00 \pm 5,5% (fa) dan 42,00 \pm 2,7% (fb); rerata viabilitas 70,40 \pm 2,3% (fa) dan 71,80 \pm 2,2% (fb); rerata abnormalitas 11,20 \pm 1,3% (fa) dan 10,60 \pm 1,3% (fb). Kesimpulan yang diperoleh adalah penggunaan medium putih telur efektif untuk mengubah rasio proporsi spermatozoa X dan Y kambing Saanen pada konsentrasi P2 memberikan hasil terbaik untuk pemisahan spermatozoa.

Kata kunci: kambing Saanen, medium putih telur, pemisahan spermatozoa X dan Y

**THE EFFECT OF DIFFERENT EGG WHITE MEDIUM
CONCENTRATIONS ON SPERMATOZOA SEPARATION ON THE
QUALITY AND PROPORTION OF X AND Y SPERMATOZOA OF
SAANEN GOATS**

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ABSTRACT

This study aims to determine the impact of varying concentrations of egg white medium on the separation of spermatozoa in Saanen goats. The study specifically focuses on assessing the quality and quantity of X and Y spermatozoa in both the upper and lower fractions of each medium. 1) P0 represents sperm without egg white concentration, which serves as the control group. 2) P1 represents a concentration of 10% egg white combined with 30% other substances. 3) P2 represents a concentration of 15% egg white combined with 45% other substances. 4) P3 represents a concentration of 25% egg white combined with 75% other substances. The semen from 3-year-old male Saanen goats was obtained through the use of an artificial vagina and examined both macroscopically (for volume, pH, colour, odour, and consistency) and microscopically (for motility, viability, and abnormalities). The data collected after separation was analysed using a Completely Randomised Design (CRD) and Duncan's Multiple Range Test (DMRT) to determine significant changes in motility, viability, abnormalities, and the fraction of X and Y spermatozoa depending on head length and width. The findings demonstrated that varying concentrations of egg white medium had a substantial impact on the proportion of X spermatozoa in the upper layer and Y spermatozoa in the lower layer ($P < 0.05$). Nevertheless, there was an inclination towards a reduction in the motility and viability of spermatozoa, accompanied by an increase in spermatozoa abnormalities. The P2 treatment had the largest percentages of X and Y spermatozoa, with 15% X spermatozoa (fa) and 45% X spermatozoa (fb). This resulted in a total of $78.40 \pm 5.5\%$ X spermatozoa (fa) and $21.60 \pm 5.5\%$ Y spermatozoa (fa), as well as $18.40 \pm 5.5\%$ X spermatozoa (fb) and $81.60 \pm 5.5\%$ Y spermatozoa (fb). The mean motility rates were $36.00 \pm 5.5\%$ (fa) and $42.00 \pm 2.7\%$ (fb), while the mean viability rates were $70.40 \pm 2.3\%$ (fa) and $71.80 \pm 2.2\%$ (fb). The average abnormality rates were $11.20 \pm 1.3\%$ (fa) and $10.60 \pm 1.3\%$ (fb). Overall, the use of egg white medium successfully modifies the proportion of X and Y spermatozoa in Saanen goats. Among the many concentrations tested, the P2 concentration yields the most favorable outcomes for separating spermatozoa.

Keywords: egg white medium, Saanen goat, X and Y spermatozoa separation