

PEMISAHAN DAN PEMBEKUAN X DAN Y SPERMATOZOA TERHADAP VIABILITAS, MOTILITAS DAN FERTILITAS DOMBA

INTISARI

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Penelitian ini bertujuan untuk mengetahui pengaruh pemisahan dan pembekuan spermatozoa X dan Y domba terhadap viabilitas, motilitas dan fertilitas. Penelitian dilaksanakan di Laboratorium Fisiologi dan Reproduksi Ternak Fakultas Peternakan Universitas Gadjah Mada. Sampel sperma yang digunakan berasal dari 2 (dua) ekor domba jantan Garut, yang ditampung dengan metode vagina buatan. Penelitian tahap I; pemisahan spermatozoa X dan Y menggunakan 4 (empat) perlakuan medium albumin putih telur dan masing-masing medium terdiri dari fraksi atas dan fraksi bawah; 10%:30% (P1); 15%:45% (P2); 20%:60% (P3); dan 25%:75% (P4). Penelitian tahap II; uji kualitas sperma sexing melalui penyimpanan dan pembekuan dengan 4 (empat) perlakuan; P0: equilibrasi (kontrol); P1: penyimpanan pada suhu 5°C (24 jam pasca equilibrasi); P2: pembekuan lambat (*slow freezing*); dan P3: pembekuan cepat (*vitrifikasi*), serta uji fertilitas melalui inseminasi buatan menggunakan sperma cair. Data dianalisis menggunakan statistik dengan Rancangan Acak Lengkap pola searah dan dilanjutkan dengan *Duncan's Multiple Range Test* untuk data dengan perbedaan yang nyata. Hasil penelitian Tahap I menunjukkan bahwa pemisahan dengan albumin putih telur berpengaruh sangat nyata meningkatkan proporsi spermatozoa X dan Y ($P \leq 0,01$), namun cenderung menurunkan kualitas spermatozoa. Proporsi spermatozoa X dan Y tertinggi didapatkan pada perlakuan P4, 76,76% (fraksi atas) dan 79,18% (fraksi bawah). dengan rata-rata kualitas spermatozoa dalam kategori baik. Penelitian Tahap II menunjukkan perlakuan berpengaruh sangat nyata ($P \leq 0,01$) menurunkan kualitas spermatozoa X dan Y. Rata-rata kualitas spermatozoa tertinggi didapatkan pada perlakuan equilibrasi (P0) sehingga layak diaplikasikan untuk IB dalam bentuk sperma cair. Uji fertilisasi melalui inseminasi sperma cair fraksi atas (spermatozoa X) dan fraksi bawah (spermatozoa Y) menghasilkan angka Conception rate (CR) 83,3% dan *Service per Conception* (S/C) sebesar 1,2. Disimpulkan bahwa albumin putih telur efektif digunakan untuk pemisahan spermatozoa X dan Y domba. Sperma hasil pemisahan albumin putih telur konsentrasi 25% dan 75% setelah equilibrasi dan inseminasi masih memiliki daya fertilitas tinggi.

Kata kunci: Inseminasi buatan, Pembekuan, Pemisahan, Sperma cair, Spermatozoa X dan Y domba

SEPARATION AND FREEZING X AND Y OF RAMS SPERMATOZOA ON THE VIABILITY, MOTILITY AND FERTILITY

ABSTRACT

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This study aimed to determine the effect the separation and freezing X and Y of rams spermatozoa on viability, motility and fertility. Research was conducted at the Laboratory of Animal Physiology and Reproduction Faculty of Animal Husbandry, Gadjah Mada University. Sperm samples were collected from two (2) Garut rams, using an artificial vagina. The research was conducted in two stages. First; separation of X and Y sperm using four (4) treatment medium of egg white albumin and each medium consisting of top and bottom fractions; 10%: 30% (P1); 15%: 45% (P2); 20%: 60% (P3); and 25%: 75% (P4). Second; test the quality of sperm sexing and freezing through storage with four (4) treatment; P0: equilibrasi (control); P1: storage at 5°C (24 hours post equilibrasi); P2: slow freezing (slow freezing); and P3: rapid freezing (vitrification), as well as fertility test through artificial insemination using sperm liquid. Data were analysis of using Analysis of Variance completely randomized design. The differences of treatment were tested by Duncan's Multiple Range Test. Results phase I study showed that the separation with egg white albumin significantly increased the proportion of spermatozoa X and Y ($P \leq 0,01$), but tended to decrease sperm quality. The highest proportion of X and Y spermatozoa was found in P4 treatment, the proportion of the original 57.38: 42.62% turned into 76.76: 35.49% (top fraction) and 20.81: 79.18% (lower fraction) with the average quality of spermatozoa in both categories. Phase II of studies showed the treatments significantly affected ($P \leq 0,01$) on decreasing the quality of spermatozoa X and Y. The on average the highest quality of spermatozoa obtained at treatment equilibrasi (P0), therefore suitable for artificial insemination application of liquid sperm. After insemination with sperm liquid top fraction (spermatozoa X) and below fraction (spermatozoa Y) obtained of Conception rate and Servis per conception were 83.3% and 1.2 respectively. It was concluded that the egg albumin is effective for the separation X and Y of rams spermatozoa. Sperm separation using egg albumin 25% and 75% after post equilibration and insemination still have a high fertility.

Keywords: Artificial insemination, Freezing, Liquid semen, Separation, X and Y ram sperm