

DETEKSI TINGKAT KERUSAKAN DNA SPERMATOZOA PASCA THAWING PADA SAPI *FRIESIAN HOLSTEIN* DAN SAPI BRAHMAN DENGAN METODE PEWARNAAN EOSIN

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INTISARI

Penelitian ini bertujuan untuk mengetahui tingkat kerusakan DNA pada spermatozoa sapi *Friesian holstein* dan sapi Brahman menggunakan metode pewarnaan Eosin. Penelitian ini menggunakan semen beku dari 3 ekor sapi *Friesian Holstein* dan 3 ekor sapi Brahman dengan 18 *straw* produksi Balai Besar Inseminasi Buatan Singosari, Malang, Jawa Timur per pejantan. Penelitian ini dilakukan di Laboratorium Fisiologi dan Reproduksi Ternak Universitas Gadjah Mada Yogyakarta dari September hingga November 2021. Penelitian ini terdiri dari beberapa tahap, yaitu persiapan sampel, *thawing*, pengamatan motilitas, pengamatan abnormalitas dan pengamatan kerusakan DNA. Data yang diperoleh kemudian dianalisis menggunakan *excel*. Hasil penelitian menunjukkan bahwa tidak terdapat perbedaan nyata pada motilitas, dan tingkat kerusakan DNA spermatozoa sapi FH dan sapi Brahman ($P > 0,05$), namun menunjukkan perbedaan nyata pada abnormalitas Rata-rata motilitas, abnormalitas spermatozoa ($P < 0,05$). Rata-rata motilitas sapi FH adalah $48,11 \pm 3,965\%$ dan sapi Brahman $48,17 \pm 6,424\%$. Rata-rata abnormalitas sapi FH adalah $19,28 \pm 5,833\%$ dan sapi Brahman $14,50 \pm 3,504\%$. Rata-rata kerusakan DNA spermatozoa dengan pewarnaan eosin sapi FH $0,328 \pm 0,825\%$ dan sapi Brahman $0,217 \pm 0,581\%$. Dapat disimpulkan bahwa kerusakan DNA spermatozoa pasca *thawing* dapat dideteksi dengan pewarnaan Eosin. Kerusakan DNA spermatozoa sapi FH dan sapi Brahman berada di bawah nilai DNA Fragmentasi Indeks (DFI) Semen beku keduanya layak digunakan untuk inseminasi buatan berdasarkan motilitas, abnormalitas, dan kerusakan DNA.

(Kata kunci: *Friesian holstein*, Brahman, sperma, kerusakan DNA, infertilitas)

DETECTION OF POST-*THAWING* SPERMATOZOA DNA DAMAGE LEVEL IN FRIESIAN HOLSTEIN AND BRAHMAN BULL BY EOSIN STAINING METHOD

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ABSTRACT

This study aimed to determine the level of DNA damage in spermatozoa of Friesian Holstein and Brahman Bull using Eosin staining method. This study used frozen semen from 3 Friesian Holstein cows and 3 Brahman cows with 18 straws produced by the Singosari Artificial Insemination Center, Malang, East Java per male. This research was conducted at the Laboratory of Livestock Physiology and Reproduction, Gadjah Mada University, Yogyakarta from September to November 2021. This study consisted of several stages, which are sample preparation, *thawing*, motility observation, abnormality observation and DNA damage observation. The data obtained were then analyzed using excel. The results showed that there was no significant difference in motility, and the level of DNA damage of spermatozoa of FH Bull and Brahman Bull ($P > 0.05$), but showed a significant difference in the average motility, abnormalities of spermatozoa ($P < 0.05$). The average motility of FH Bull was $48.11 \pm 3.965\%$ and Brahman Bull was $48.17 \pm 6.424\%$. The average abnormality of FH Bull was $19.28 \pm 5.833\%$ and Brahman Bull was $14.50 \pm 3.504\%$. The average damage to spermatozoa DNA with eosin staining of FH Bull was $0.328 \pm 0.825\%$ and Brahman Bull was $0.217 \pm 0.581\%$. It can be concluded that post-*thawing* spermatozoa DNA damage can be detected by Eosin staining. DNA damage of spermatozoa of FH Bull and Brahman Bull is below the value of DNA Fragmentation Index (DFI) Frozen semen are both feasible to use for artificial insemination based on motility, abnormality, and DNA damage.

(Keywords: Friesian holstein, Brahman, sperm, DNA damage, infertility)