



KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN  
**UNIVERSITAS SYIAH KUALA**  
**UPT. PERPUSTAKAAN**

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## ELECTRONIC THESIS AND DISSERTATION UNSYIAH

### TITLE

PROFIL HORMON PROGESTERON DAN BOVINE INTERFERON-TAU (BIFN-T) PADA SAPI ACEH YANG MENGALAMI REPEAT BREEDING DAN NON-REPEAT BREEDING.

### ABSTRACT

#### RINGKASAN

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HUSNURRIZAL. Profil Hormon Progesteron dan Bovine Interferon- $\tau$  (bIFN- $\tau$ ) pada Sapi Aceh yang Mengalami Repeat Breeding dan Non-Repeat Breeding.

Dibimbing oleh TONGKU NIZWAN SIREGAR dan SRI WAHYUNI.

Permasalahan utama dalam pengembangan produktivitas sapi aceh adalah rendahnya efisiensi dan performan reproduksi yang disebabkan oleh gangguan reproduksi. Salah satu gangguan reproduksi yang terjadi pada sapi aceh adalah repeat breeding (RB). Kejadian RB pada sapi aceh diduga dipengaruhi oleh ketidakseimbangan hormonal terutama progesteron dan sekresi bIFN- $\tau$  pada awal masa kebuntingan yang dapat menyebabkan terjadinya kegagalan fertilisasi dan kematian embrio dini. Penelitian ini bertujuan mengetahui profil hormon progesteron dan bIFN- $\tau$  dan korelasi antara hormon progesteron dan bIFN- $\tau$  pada sapi aceh RB dan non-RB. Penelitian ini menggunakan 10 ekor sapi aceh, yang terdiri atas 5 ekor sapi aceh non-RB dan 5 ekor sapi aceh RB. Seluruh sapi aceh non-RB dan RB disinkronisasi estrus menggunakan hormon PGF $_{2i}$ ; dan dilakukan inseminasi buatan (IB). Sampel serum dikoleksi pada hari ke-5, 6, 7, 15, 16, dan 17 pasca IB untuk pemeriksaan konsentrasi progesteron pada awal dan akhir fase luteal, sedangkan untuk pemeriksaan konsentrasi bIFN- $\tau$  dilakukan pada hari ke-14 sampai hari ke-18 pasca IB. Pemeriksaan konsentrasi progesteron dan bIFN- $\tau$  menggunakan teknik enzyme linked immunosorbent assay (ELISA). Pemeriksaan kebuntingan dilakukan dengan ultrasonografi (USG) pada hari ke-25, 35, 45 dan 55 pasca IB. Data konsentrasi progesteron dan bIFN- $\tau$  dianalisis dengan uji Mann Whitney dan uji t, sedangkan korelasi antara progesteron dan bIFN- $\tau$  diuji dengan uji korelasi Spearman.

Hasil penelitian menunjukkan bahwa rata-rata konsentrasi hormon progesteron pada sapi aceh RB vs non-RB pada hari ke-5; 6; 7; 15; 16; dan 17 pasca IB masing-masing adalah 3,02 $\bar{i}$ , $\pm$ 2,81 vs 3,84 $\bar{i}$ , $\pm$ 4,53; 3,54 $\bar{i}$ , $\pm$ 3,04 vs 2,67 $\bar{i}$ , $\pm$ 3,15; 5,11 $\bar{i}$ , $\pm$ 4,58 vs 5,01 $\bar{i}$ , $\pm$ 6,44; 5,56 $\bar{i}$ , $\pm$ 2,77 vs 13,78 $\bar{i}$ , $\pm$ 16,50; 5,84 $\bar{i}$ , $\pm$ 3,46 vs 15,54 $\bar{i}$ , $\pm$ 15,10; dan 6,06 $\bar{i}$ , $\pm$ 3,41 vs 15,36 $\bar{i}$ , $\pm$ 15,29 ng/ml ( $p > 0,05$ ). Konsentrasi bIFN- $\tau$  pada sapi aceh RB vs non-RB pada hari ke-14; 15; 16; 17; dan 18 pasca IB masing-masing adalah 9,01 $\bar{i}$ , $\pm$ 4,76 vs 11,27 $\bar{i}$ , $\pm$ 10,08; 9,29 $\bar{i}$ , $\pm$ 7,59 vs 11,45 $\bar{i}$ , $\pm$ 8,16; 8,06 $\bar{i}$ , $\pm$ 5,79 vs 11,02 $\bar{i}$ , $\pm$ 7,75; 7,22 $\bar{i}$ , $\pm$ 4,88 vs 9,02 $\bar{i}$ , $\pm$ 6,55; dan 6,15 $\bar{i}$ , $\pm$ 5,22 vs 10,29 $\bar{i}$ , $\pm$ 8,29 pg/ml ( $p > 0,05$ ). Konsentrasi progesteron pada sapi aceh non-RB dan RB memiliki korelasi yang tidak signifikan dengan bIFN- $\tau$  pada hari ke-15 pasca IB ( $p > 0,05$ ) dengan koefisien korelasi positif dengan nilai r sebesar 0,197 ( $p$  value = 0,803) pada sapi aceh non-RB dan 0,514 ( $p$  value = 0,486) pada sapi aceh RB. Hasil pemeriksaan kebuntingan dengan ultrasonografi menunjukkan bahwa sapi aceh non-RB dinyatakan bunting sejak hari ke-25 sampai 55 Pasca IB, sedangkan sapi RB menunjukkan tidak bunting dan terjadi kematian embrio dini. Berdasarkan hasil penelitian dapat disimpulkan bahwa konsentrasi progesteron dan bIFN- $\tau$  pada sapi aceh non-RB lebih tinggi dibandingkan sapi aceh RB dan terdapat korelasi yang tidak signifikan antara bIFN- $\tau$  dan hormon progesteron pada sapi aceh RB dan non-RB ( $P > 0,05$ ). Sapi aceh non-RB masih mampu mempertahankan kebuntingan hingga hari ke-55 sedangkan sapi aceh RB didiagnosa telah mengalami kematian embrio dini sebelum hari ke-25 pasca IB.

#### SUMMARY

HUSNURRIZAL. Profile of Progesterone Hormone and Bovine Interferon- $\tau$  (bIFN- $\tau$ ) in The Repeat Breeding and Non Repeat Breeding Aceh Cows. Under Direction of TONGKU NIZWAN SIREGAR and SRI WAHYUNI.

The main problems in the development of aceh cows are low efficiency and reproductive performance caused by reproductive disorders. One of that reproductive disorders in aceh cows is the repeat breeding (RB). The incidence of RB in aceh cows is thought to be influenced by hormonal imbalances, especially between progesterone and bIFN- $\tau$  secretion in early pregnancy that contributes to fertilization failure and early embryo mortality. The aim of this study was to determine the profile of the progesterone hormone and bIFN- $\tau$ , and their correlation between RB and non-RB aceh cows. This study used 10 aceh cows, consisting of 5 non-RB and 5 RB Aceh cows. All of non-RB and RB aceh cows were synchronized by PGF $_{2i}$ ; and artificial insemination (AI) was performed. Serum sample collection was carried out on the 5th, 6th, 7th, 15th, 16th, and 17th days post AI to examine the progesterone concentration at early and late luteal phase, whereas bIFN- $\tau$  concentration was measured on the 14th to 18th days



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post AI using enzyme-linked immunosorbent assay (ELISA) technique. The pregnancy diagnosis was performed with ultrasonography (USG) techniques on 25th, 35th, 45th and 55th days post AI. The data of progesterone hormone and bIFN- $\gamma$  concentration were analyzed using Mann Whitney U test and student t-test, while the correlation between the progesterone hormone and bIFN- $\gamma$  were analyzed by the Spearman correlation test.

The results of the study showed that the average of the progesterone concentration in RB and non-RB aceh cows on 5th, 6th, 7th, 15th, 16th, and 17th days post insemination, respectively  $3,02\bar{i}, \pm 2,81$  vs  $3,84\bar{i}, \pm 4,53$ ;  $3,54\bar{i}, \pm 3,04$  vs  $2,67\bar{i}, \pm 3,15$ ; and  $5,11\bar{i}, \pm 4,58$  vs  $5,01\bar{i}, \pm 6,44$  ng/ml;  $5,56\bar{i}, \pm 2,77$  vs  $13,78\bar{i}, \pm 16,50$ ;  $5,84\bar{i}, \pm 3,46$  vs  $15,54\bar{i}, \pm 15,10$ ; and  $6,06\bar{i}, \pm 3,41$  vs  $15,36\bar{i}, \pm 15,29$  ng/ml ( $p > 0.05$ ). The concentration of bIFN- $\gamma$  in RB and non-RB aceh cows on 14th, 15th, 16th, 17th and 18th days post insemination, respectively  $9,01\bar{i}, \pm 4,76$  vs  $11,27\bar{i}, \pm 10,08$ ;  $9,29\bar{i}, \pm 7,59$  vs  $11,45\bar{i}, \pm 8,16$ ;  $8,06\bar{i}, \pm 5,79$  vs  $11,02\bar{i}, \pm 7,75$ ;  $7,22\bar{i}, \pm 4,88$  vs  $9,02\bar{i}, \pm 6,55$ ; and  $6,15\bar{i}, \pm 5,22$  vs  $10,29\bar{i}, \pm 8,29$  pg/ml ( $p > 0.05$ ). The progesterone concentration in RB and non-RB aceh cows was showed no significant correlation with the bIFN- $\gamma$  from days 15th post insemination ( $p > 0.05$ ) with a positif correlation coefficient with r-value = 0,197 (p value = 0,803) in the non-RB aceh cows and 0,514 (p value = 0,486) in the RB aceh cows. The Results of pregnancy examination by ultrasonography showed that non-RB aceh cows were declared pregnant since on 25th to 55th days post insemination, whereas the RB aceh cows showed no pregnancy and early embryo mortality was occurred. Based on the results of the study it can be concluded that the progesterone concentration and bIFN- $\gamma$  concentration in non-RB aceh cows is higher than RB aceh cows and there is no significant correlation between bIFN- $\gamma$  and progesterone hormone in RB and non-RB aceh cows ( $p > 0.05$ ). The non-RB aceh cows was still capable to preserve pregnancy until 55th days post insemination, while the RB aceh cow has been diagnosed with an early embryo mortality before 25th days post insemination.