

Kajian Analisis Hormon Estradiol dan Perubahan Organ Reproduksi pada Sapi Potong *Postpartus*

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INTISARI

Organ reproduksi sapi *postpartus* menjalani serangkaian proses fisiologis dan anatomis, untuk kembali ke kondisi normal tidak bunting. *Recovery* organ reproduksi dapat dibuktikan dengan involusi uteri, perkembangan folikel, ovarium dan estradiol. Penelitian ini bertujuan untuk mengkaji perubahan organ reproduksi dan mendeteksi kadar estradiol dalam darah berdasarkan dinamika perkembangan folikel dan ovarium pada sapi potong *postpartus*. Riset ini menggunakan sapi potong jenis Peranakan Ongole (PO) (n=8) dan *Crossbreed* (CB) (n=8), multipara, partus normal dengan kondisi sehat, umur 3-10 tahun dan SKT 2,5-3,5. Pengukuran serviks, kornua, folikel dan ovarium menggunakan ultrasonografi (USG) dan pengambilan darah melalui *vena jugularis* secara periodik dimulai pada minggu ke-1, 5, 9, 13, 17. Hasil penelitian menunjukkan diameter rata-rata serviks minggu ke-1 pada sapi *breed* PO $6,6 \pm 0,5$ cm dan CB $7,1 \pm 0,5$ cm. Penyusutan signifikan pada minggu ke-1 hingga 5 (*breed* PO $3,3 \pm 0,3$ cm dan CB $3,3 \pm 0,2$ cm). Diameter kornua minggu ke-5 *breed* PO $4,8 \pm 0,4$ cm dan $5,0 \pm 0,5$ cm, pada CB $4,9 \pm 0,4$ cm dan $4,6 \pm 0,4$ cm. Perubahan ukuran kornua uteri terjadi signifikan pada minggu ke-1 hingga 9 dan setelahnya memiliki ukuran yang kurang lebih hampir sama. Diameter folikel terendah pada minggu ke-5 (PO= $3,5 \pm 0,2$ mm dan CB= $3,2 \pm 0,2$ mm) dan tertinggi di minggu ke-17 (PO= $5,3 \pm 0,7$ mm dan CB= $5,1 \pm 0,5$ mm). Hasil pengukuran rata-rata diameter ovarium sapi PO dan CB berkisar $20,0 \pm 1,0$ mm sampai $24,2 \pm 1,6$ mm. Analisis estradiol menggunakan metode *Enzym-linked immunosorbent assay*. Hasil analisis estradiol dari minggu ke-5 hingga 17 berkisar $30,3 \pm 2,9$ sampai $49,5 \pm 8,8$ pg/ml. Hasil klasifikasi berdasarkan ukuran folikel dan ovarium; grup satu memiliki diameter folikel $\leq 2,0$ mm dan ovarium $\leq 20,0$ mm menghasilkan rata-rata kadar estradiol sebesar $22,8 \pm 1,7$ pg/ml. Grup dua (diameter folikel 3,0-5,0 mm dan ovarium 21,0-25,0 mm), menghasilkan rata-rata estradiol $38,9 \pm 2,0$ pg/ml. Grup tiga (diameter folikel 6,0-9,0 mm dan ovarium 26,0-30,0 mm) menghasilkan rata-rata estradiol $61,1 \pm 6,0$ pg/ml. Kesimpulan penelitian ini adalah terjadi proses *remodelling* dengan pola yang bervariasi pada organ reproduksi serviks, kornua, ovarium dan folikel pada sapi potong *postpartus*. Ada korelasi yang kuat antara kadar estradiol dengan perkembangan ovarium dan folikel sapi potong *postpartus*. Tidak ada perbedaan profil hormon dan perubahan organ reproduksi serviks, kornua, ovarium, folikel antara sapi potong bangsa PO dan CB.

Kata Kunci: estradiol, organ reproduksi, *postpartus*, sapi potong

The Study of Estradiol Hormone Analysis and Changes in Reproductive Organs of Postpartum Beef Cattle

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ABSTRACT

The reproductive organs of postpartum cattle undergo a series of physiological and anatomical processes to return to their nonpregnant state. Reproductive organ recovery can be demonstrated by uterine involution, as well as the development of follicles, ovaries, and estradiol. This study aimed to examine the changes in reproductive organs and to detect levels of estradiol in blood, based on the dynamics of follicle and ovarian development. A total of eight of Ongole (PO) and eight of Crossbreed (CB), with the characteristics of multiparous, normal parturition, aged 3-10 years, and BCS 2.5-3.5, were used in the present study. Measurement of the cervix, cornua, follicles, and ovaries was done by using ultrasonography. Blood sampling was done periodically through the jugular vein starting at weeks 1, 5, 9, 13, 17. The results showed that the mean cervical diameter of the first week in PO and CB was 6.6 ± 0.5 cm and 7.1 ± 0.5 cm, respectively. There was significant shrinkage at weeks 1 to 5 (PO = 3.3 ± 0.3 cm and CB = 3.3 ± 0.2 cm). Cornua diameters at weeks 5 were 4.8 ± 0.4 cm and 5.0 ± 0.5 cm (PO), 4.9 ± 0.4 cm and 4.6 ± 0.4 cm (CB). The significant changes in the size of the uterine cornua were observed at weeks 1 to 9 and thereafter they were about the same size. The results showed that the lowest diameter of PO and CB follicles was seen at week 5 (3.5 ± 0.2 mm and 3.2 ± 0.2 mm, respectively) and the highest was seen at week 17 (5.3 ± 0.7 mm and 5.1 ± 0.5 mm, respectively), with a diameter mean of PO and CB cows ranged from 20.0 ± 1.0 to 24.2 ± 1.6 mm. Estradiol analysis was performed using the enzyme-linked immunosorbent assay technique. The results of the estradiol analysis at weeks 5-17 were ranged from 30.3 ± 2.9 to 49.5 ± 8.8 pg/ml. Diameter of follicles, ovaries, and estradiol levels were classified into 3 groups (follicular and ovarian diameter on the first group sequentially, ≤ 2.0 mm and ≤ 20.0 mm; second group, 3.0-5.0 mm and 21.0-25.0 mm; third group, 6.0-9.0 mm and 26.0-30.0 mm). The means of estradiol levels of the first to the third group were 22.8 ± 1.7 pg/ml, 38.9 ± 2.0 pg/ml, and 61.1 ± 6.0 pg/ml. In conclusion, there is a remodeling process with varying patterns in the reproductive organs of the cervix, cornua, ovaries, and follicles in postpartum beef cattle. There is a strong correlation between estradiol levels and the development of ovaries and follicles of postpartum beef cattle. There were no differences in hormone profiles and changes in the reproductive organs of the cervix, cornua, ovaries, follicles between PO and CB beef cattle.

Keywords : estradiol, reproductive organs, postpartum, beef cattle