

Gambaran Metabolik Darah Sapi *Brahman Crossbred* (BX) yang Dipelihara dengan Sistem Integrasi Sapi – Kelapa Sawit (SISKA) di Kabupaten Kotawaringin Barat Provinsi Kalimantan Tengah

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INTISARI

Penelitian dan kajian parameter klinis khususnya tentang gambaran metabolik darah sapi *Brahman crossbred* (BX) yang dipelihara secara ekstensif di perkebunan kelapa sawit dengan sistem integrasi sapi-sawit (SISKA) di Indonesia belum banyak dilaporkan. Penelitian ini bertujuan mengetahui gambaran metabolik darah sapi BX berdasarkan status *sex*, umur, status reproduksi dan *Body Condition Score* (BCS), melalui pengukuran parameter kimia darah. Sebanyak 220 ekor sapi BX sehat secara klinis dibagi berdasarkan kelompok *sex* (*bulls* dan *cow*), umur (*calf*, *heifer* dan *cow*), BCS (2,5 dan 3 pada sapi *cow* laktasi serta 3 dan 3,5 pada *cow* dan *cow* bunting) dan status reproduksi (*cow*, *cow* bunting dan *cow* laktasi). Sapi dipelihara secara ekstensif dengan model rotasi *grazing* di blok perkebunan kelapa sawit selama 3 bulan. Sampel darah diambil dari vena *coccygea* sebanyak 5-10 ml pasca *grazing*, kemudian di sentrifugasi 2000 rpm selama 10 menit untuk mendapatkan serum. Analisis serum darah menggunakan prinsip spektrofotometri (*Roche/Hitachi Cobas 6000 analyzer*). Parameter yang dianalisis meliputi profil energi (glukosa dan trigliserida), profil protein meliputi *Blood Urea Nitrogen* (BUN), kreatinin, total protein (TP), albumin (ALB), globulin (GLB), dan profil makro mineral meliputi kalsium (Ca), fosfor (P), magnesium (Mg), kalium (K), natrium (Na) dan klorida (Cl). Analisis data menggunakan perangkat lunak SAS 9.4 dengan tingkat signifikansi 0,05 ($p < 0,05$). Status *sex* dan BCS masing-masing menggunakan *t-test* dan faktorial, sementara status umur dan reproduksi menggunakan *one way anova*. Hasil penelitian menunjukkan bahwa *sex* berpengaruh signifikan ($p < 0,05$) terhadap rerata konsentrasi BUN, ALB, Mg dan Na. Umur berpengaruh signifikan ($p < 0,05$) terhadap rerata konsentrasi glukosa, BUN, kreatinin, TP, ALB, GLB, Ca, P, Mg, K, Na, Cl. *Heifer* memiliki konsentrasi glukosa tinggi dibandingkan kelompok lain. Konsentrasi ALB dan makro mineral ditemukan tinggi pada *calf*, sedangkan TP, GLB, BUN, kreatinin tertinggi pada *cow*. Status reproduksi dan BCS berpengaruh signifikan ($p < 0,05$) terhadap semua parameter pemeriksaan kecuali P. Konsentrasi glukosa, TP, ALB, GLB, Ca, Mg, Na, K, Cl tertinggi pada *cow* laktasi. Konsentrasi trigliserida dan BUN dilaporkan tinggi pada *cow* bunting, sementara konsentrasi kreatinin tertinggi pada *cow*. Level konsentrasi glukosa, trigliserid, BUN, protein dan makro mineral tinggi pada BCS 3, sementara konsentrasi kreatinin tertinggi pada *cow* BCS 3,5.

Kata kunci: *Brahman crossbred*, metabolik darah, kelapa sawit.

Blood Biochemical Parameters of Brahman Crossbred (BX) Cattle Raised with Cattle - Palm Oil Integration System in West Kotawaringin Regency Central Kalimantan Province

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ABSTRACT

Research and study of clinical parameters, especially regarding the blood metabolic features of Brahman crossbred (BX) cattle that are maintained extensively in oil palm plantations in Indonesia have not been widely reported. This study aimed to determine the features of BX blood metabolic based on sex, age, reproductive and Body Condition Score (BCS), by measuring blood chemistry parameters. Clinically healthy 220 BX cattle were divided into sex (bulls dan cow), age (calf, heifer and cow), reproduction (cow, pregnant and lactation) and BCS groups (2,5 and 3 in the lactating cow; 3 and 3,5 in cow and pregnant). Cows were maintained extensively with rotational grazing models in oil palm plantation blocks for 3 months. Blood samples were taken from 5-10 ml coccygeal veins after grazing, then centrifuged 2000 rpm for 10 minutes to obtain serum samples. Analysis of blood serum were used the spectrophotometric principle (Roche/Hitachi Cobas 6000 analyzer). Serum samples were analyzed by energy profiles (glucose and triglycerides), protein profile {Blood Urea Nitrogen (BUN), creatinine, total protein (TP), albumin (ALB), globulin (GLB)}, and macro minerals profile (calcium (Ca), phosphorus (P), magnesium (Mg), potassium (K), sodium (Na) and chloride (Cl)}. The data were analyzed using SAS 9.4 software with a significance level of 0.05 ($p < 0.05$). Sex and BCS were analyzed using t-test and factorial, while age and reproduction status by one way ANOVA. The results showed that sex had significant differences ($p < 0.05$) on the mean concentration of BUN, ALB, Mg and Na. The age had a significant effect ($p < 0.05$) on the mean glucose concentration, BUN, creatinine, TP, ALB, GLB, Ca, P, Mg, K, Na, Cl. Heifer had a high glucose concentration compared to other groups. ALB and macro mineral concentrations were found to be high in the calf, whereas TP, GLB, BUN, creatinine were highest in the cow. Reproductive status and BCS had a significant effect ($p < 0.05$) on all examination parameters except P. The concentration of glucose, TP, ALB, GLB, Ca, Mg, Na, K, Cl was highest in lactation cow. Triglyceride and BUN concentrations were reported to be high in pregnant cow, while creatinine concentrations were highest in the non pregnant and non lactation cow. High glucose, triglyceride, BUN, protein and macro mineral concentration levels in BCS 3, while highest creatinine concentration was found in cow with BCS 3,5.

Keywords: *Brahman crossbred*, blood metabolic, oil palm.