Abstract
Background: The bovine viral diarrhea virus (BVDV) causes mucosal lesions, respiratory disorders, spontaneous abortion, congenital abnormalities, and stillbirth in cattle and wild ruminant populations worldwide. Clinical categories of BVDV infection include persistent subclinical infection, acute transient infection, and mucosal disease. Virus neutralization, enzyme-linked immunosorbent assay (ELISA), and reverse transcription and polymerase chain reaction have been used for the detection of BVDV-infected cattle, but are time-consuming and costly methods, especially when screening large herds for persistent subclinical infections. In the current research, it was hypothesized that hemogram and blood gas values can be valuable indicator in the diagnosis and prognosis of infectious disease like metabolic disorders. The aim of this current study was to determine whether changes in the hematological parameters of BVDV-infected cattle represent potentially useful diagnostic factors.

Methods & Results: Blood samples were collected from the jugular vein of 15 BVDV-antigen-positive (sick group) and 15 BVDV-antigen-negative (control group) Holstein cattle on a dairy farm in Konya Province in the Central Anatolia region of Turkey between January 2012 and September 2012. The presence of the BVDV antigen in the blood samples was determined with commercially available ELISA kit by using ELISA reader. Hemogram parameters [white blood cell counts (WBC), lymphocytes, monocytes, granulocytes, red blood cell counts (RBC), hematocrit (Hct), hemoglobin (Hb) and thrombocyte counts (THR)] obtained from anticoagulated bloods were measured with automatic cell counter. Blood gas values [power of hydrogen (pH), partial pressure of carbon dioxide (pCO2), partial pressure of oxygen (pO2), sodium (Na+2), potassium (K+), calcium (Ca+2), glucose (Glu), lactate (Lac), actual bicarbonate (HCO3act), standard bicarbonate (HCO3std), total carbon dioxide (tCO2), base excess in vivo (BEvv), base excess in vitro (BEvt), oxygen content (sO2)] were measured by blood gas analyzer. The data for the antigen-positive cattle were compared to those of the control cattle using independent-sample t-tests (SPSS 19.0 for windows). The results were expressed as Mean ± Standard Deviation. Difference were considered significant when P < 0.05. The white blood cell count, the relative proportions of lymphocytes and monocytes; the pO2 and sO2 values; and the serum levels of sodium and potassium in the BVDV-antigen-positive cattle were significantly lower (P < 0.05) than those of the control cattle. By contrast, the relative proportion of granulocytes, the total CO2 value, and the serum levels of actual bicarbonate and standard bicarbonate in the BVDV-antigen-positive cattle were significantly higher (P < 0.05) than those of the control cattle. Discussion: Bovine viral diarrhea virus infection is a common viral disease in cattle and wild ruminant populations in the world. BVDV may result in mucosal, reproductive and respiratory disorders, abortions, mummification, congenital anomalies, and stillbirths. Changes in the numbers of the various WBCs, blood gas values, and biochemical parameters might be useful diagnostic factors for the preliminary identification of BVDV...
infection in cattle. Leukopenia and lymphopenia might also represent important prognosticators for BVDV-infected cattle because of the increased risk of secondary infections.

**Keywords**

BVDV, viral disease, cattle, hemogram, biochemical parameters, blood gas values.