ABSTRACT

Five buffalo heifers (1.5–2 years old) and 7 non lactating non pregnant buffalo cows (4 – 5 years old) weighed 214.7 ± 11.3 and 471.4 ± 12.8 Kg, respectively were exposed to direct solar radiation for a 5 hrs. period from 10.00 am. to 15.00 pm. day after day along August month. All the parameters under study were taken twice daily, in the morning at 8-9 am and after exposure to solar radiation for each animal.

Rectal temperature (RT), respiration rate (RR), pulse rate (PR), hematological parameters, serum total protein, Albumin, globulin, sodium (Na⁺), potassium (K⁺), chloride (Cl⁻), liver enzymes (AST and ALT U/L), serum cortisol level, total body fluid (TBF), extracellular fluid (ECF), intracellular fluid (ICF), interstitial fluid (ISF), dry body weight (DBW), plasma volume (PV) and blood volume (BV) were determined.

Significant increase (P<0.01) in RT, RR and pulse rate, after exposure to sun ray, the increase of RR were 406.7% for heifers and 410.7% for buffalo cows. Pulse rate was increased by 32.62% for heifers and 35.37% for buffalo cows. Total protein and albumin significantly decrease in stressed animals. Exposure to sun ray caused increase in liver enzymes, Na, K, and Cl concentration in buffalo cows. Cortisol level was significantly increased (P<0.01) by 51.33% in buffalo heifers and by 44.19% in buffalo cows. Solar radiation caused a loss in DBW which was 28.56% in heifers and 30.05% in buffalo cows.

Exposure to solar radiation increased significantly (P<0.05 and P<0.01) absolute and relative total body fluids to body weight, extracellular fluid ml/ Kg BW, absolute and relative intracellular fluid and interstitial fluid ml/ Kg BW, while insignificant increase was found in ECF,L and ISF, L in both buffalo heifers and buffalo cows.

The absolute value of PV increased significantly (P < 0.01) by 68.82% after exposure to direct solar radiation in buffalo cows, while plasma volume insignificantly increase after heifers exposed to solar radiation. There is significantly (P < 0.05) increase of BV due to exposed to solar radiation by 7.88 % in buffalo cows.

Key words: Buffalo, Solar Radiation, Physiological Response, Body Fluids.