

Comparative Analysis of Serum Biochemical Properties among Cattle in CKDu High Prevalence Areas in Anuradhapura District of Sri Lanka

I.A.M.P. Ileperuma^{1,2}, H.M.S.Wasana^{3,4,5}, G.D.R.K.Perera^{2*},
H.T.K. Abeysundara⁶, Y. Wei³

¹ *Postgraduate Institute of Science, ²Department of Farm Animal Production and Health, Faculty of Veterinary Medicine and Animal Science, University of Peradeniya, 20400, Sri Lanka*

³ *Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China*

⁴ *Postgraduate Institute of Agriculture, ⁵Joint Research and Demonstration Center,*

⁶ *Department of Statistics and Computer Science, faculty of Science, University of Peradeniya, 20400 Sri Lanka*

* *damperera@pdn.ac.lk*

Epidemics of Chronic Kidney Disease of uncertain etiology (CKDu) in human is presented in agricultural communities in Sri Lanka and other hotspots worldwide. However, there is no detailed research work done to date to study the chronic kidney disease prevalence among cattle populations living in high CKDu prevalence areas in the country. Moreover, reference data for clinical biochemistry parameters in milking cows is limited by considering their kidney functions. Thus, the objective of this study was to compare four selected biochemical parameters by referring to their kidney functions among milking cows reared in CKDu high prevalence areas in the Anuradhapura district vs. control areas in the Kandy district. A total of 83 milking cows (50 test group and 33 control) were included in this study. Results showed that Serum Creatinine (SCR), Blood Urea Nitrogen (BUN) and Total Protein (TP) values were significantly higher ($P < 0.001$) for the test group than the control group, while the Serum Albumin (SAL) levels were significantly lower ($P < 0.001$) for the test group than the control group. The percentage of test samples that lie outside the standard interval for healthy subjects is 100% for all four biochemical properties. According to the results, it is possible to indicate 'Hypoalbuminemia' associated with inflammation suggesting chronic nephritis conditions in cow kidneys belong to the test group similar to indications reported in the CKDu patients in high CKDu prevalence areas. Hence, four biochemistry parameters used in this study strongly provide evidence, that milking cows of the high CKDu prevalence areas are more prevalent for CKD/CKDu than in control areas. Further research is recommended to address public health and animal welfare concerns.

Keywords: Blood Urea Nitrogen, Chronic Kidney Disease of uncertain etiology, Cow, Serum Albumin, Serum Creatinine

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