


Reference values for selected hematological, biochemical and physiological parameters of Sprague-Dawley rats at the Animal House, Faculty of Medicine, University of Colombo, Sri Lanka

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Abstract

Background: Lack of available reference values in a research setting under local conditions can be a drawback for beginners, as the accuracy of data from control samples cannot be checked at the beginning of a research project. This affects comparisons with data from test samples. To avoid these complications in their research projects, beginners tend to have a greater number of animals in the control group compared to test groups in order to have control group measurements within 2 SDs of the mean.

Methods: As non-availability of reference values was a long-felt need, the described project was conducted in order to establish a reference database for selected haematological, biochemical and physiological parameters using apparently healthy Sprague-Dawley rats bred in the Animal House of Faculty of Medicine, University of Colombo (UCFM).

Results: Differences in mean values of packed cell volume (PCV), mean corpuscular volume (MCV) and mean corpuscular hemoglobin concentration (MCHC), serum creatinine and blood glucose levels between the two genders were statistically significant. Lipid profile measurements did not differ significantly between genders, but mean and median values of triglycerides (TG) between male and female rats showed a difference of more than 10 mg/dL. The liver enzymes alkaline phosphatase (AP) and aspartate aminotransferase (AST) were also statistically significantly different between sexes. Despite wide variation in mean alanine aminotransferase (ALT) between sexes, the difference was not statistically significant.

Conclusion: The findings of this project should support to a certain extent the "Reduction" aspect of the 3Rs concept of Russell and Burch by reducing the number of Sprague-Dawley rats used in future research projects at UCFM.

KEYWORDS

3Rs concept, rat, reference values, Sprague-Dawley

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