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Stability of complete rabbit blood count parameters in under various storage times and temperatures

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Complete Blood Count (CBC) is an essential tool in evaluating overall animal health and detecting diseases. The stability of blood samples in various storage and temperature conditions to determine if they provide consistent results is well-studied in humans. In laboratory animals, studies in rats, mice and monkeys were conducted. However, limited studies exist on rabbits. The aim of this study is to find out if prolonged periods of storage and various temperatures influence the stability of CBCs in rabbit whole blood. Blood collection was done in towel-wrapped rabbits with local topical anesthetic cream applied on the collection site 30 minutes prior to collection. One milliliter of blood was collected from 16 New Zealand white rabbits in EDTA tubes and distributed into two aliquots, one stored at room temperature (21 °C) and the other at refrigerator temperature (4 °C). Baseline value was measured after blood collection and at various time points (6, 24, 48 and 72 hours) using an impedance technology hematology analyzer. The stability of CBC parameters was determined by comparing the results of each time point to the baseline reading. The differences were evaluated using One-way Analysis of Variance (ANOVA) repeated measures after verification of normal distribution by Chi-Square test. Friedman test was used for parameters with non-normal distribution pattern. The studied parameters include White Blood Cell count (WBC), Red Blood Cell count (RBC), Hemoglobin Concentration (HGB), Hematocrit (HCT), Platelet Count (PLT), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC), RBC Distribution Width (RDW) and Mean Platelet Volume (MPV). Results showed that most parameters were stable at 4 °C up to 24 hours except for HGB ($p=0.0079$) and MPV ($p=0.0015$) which values started to increase from 6 hours. At room temperature, most values were unstable starting from 6 hours: RBC ($p<0.0001$), HGB ($p<0.0001$), MPV ($p=0.0015$), HCT ($p=0.0475$) and PLT ($p=0.0146$). It was concluded that rabbit blood samples can be suitable for hematological analysis up to 24 hours at 4 °C storage. However, it is still advisable to process the blood samples immediately after collection to yield better and reliable results.

Biography

Shiela Francisco Margallo is a Veterinarian at Biological Resource Centre, Agency for Science, Technology and Research (A*STAR), Singapore. She has obtained her Veterinary degree from the University of the Philippines, Los Banos, Laguna. She is a veterinary professional with 10 years of combined technical experience in sales and marketing (Animal Health Division), companion animal practice and biomedical research. She is experienced in handling rodents, rabbits, swine and NHPs. Among her current roles are to provide laboratory animal medical and surgical care by examination, treatment and advice to ensure adequate and humane veterinary support; safeguard, monitor and advise on the welfare of animals. She has completed her Lab Vet Europe program from University of Copenhagen, Denmark in 2017.

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