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# Effect of Collection Technique of Blood on Clinical Pathology

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**Abstract :** To assess the impact of the blood collection technique on clinical pathology markers and to establish reference intervals, a study was performed using normal, healthy C57BL/6 mice. Both sexes were employed, and they were randomly assigned to different groups depending on the phlebotomy technique used. The blood was drawn in one of four ways: intracardiac (IC), caudal vena cava (VC), caudal vena cava (VC) plus a peritoneal collection of any extravasated blood, or retroorbital phlebotomy (RO). Several serum biochemistries, such as a liver function test, a complete blood count with differentials, and a platelet count, were analysed from the blood and serum samples analysed. Red blood cell count, haemoglobin ($p > 0.002$), hematocrit, alkaline phosphatase, albumin, total protein, and creatinine were all significantly greater in female mice. Platelet counts, specific white blood cell numbers (total, neutrophil, lymphocyte, and eosinophil counts), globulin, amylase, and the BUN/creatinine ratio were all greater in males. The VC approach seemed marginally superior to the IC approach for the characteristics under consideration and was linked to the least variation among both sexes. Transaminase levels showed the greatest variation between study groups. The aspartate aminotransferase (AST) values were linked with decreased fluctuation for the VC approach, but the alanine aminotransferase (ALT) values were similar between the IC and VC groups. There was a lot of diversity and range in transaminase levels between the MC and RO groups. We found that the RO approach, the only one tested that allowed for repeated sample collection, yielded acceptable ALT readings. The findings show that the test results are significantly affected by the phlebotomy technique and that the VC or IC techniques provide the most reliable data. When organising a study and comparing data to reference ranges, the ranges supplied here by collection method and sex can be utilised to determine the best approach to data collection. The authors suggest establishing norms based on the procedures used by each individual researcher in his or her own lab.

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