

COMPARISON OF GEL COLUMN, CARD AND CARTRIDGE TECHNIQUES FOR DEA 1.1 BLOOD TYPING OF DOGS. Mayank Seth, Sarah Winzelberg, Karen V Jackson, Urs Giger. Section of Medical Genetics, University of Pennsylvania, Philadelphia, PA.

While many blood group systems have been described in dogs, the Dog Erythrocyte Antigen (DEA) 1 blood group with the DEA 1.1 type is generally considered clinically most important. Although naturally-occurring DEA 1.1 alloantibodies are not found, sensitization of a DEA 1.1 negative dog is rapidly elicited with transfusion of DEA 1.1 positive blood and is cause for serious hemolytic reactions with subsequent DEA 1.1 mismatched transfusions. Accordingly, DEA 1.1 blood typing of donor and patient prior to transfusion is recommended. Several DEA 1.1 typing techniques have recently been introduced using monoclonal antibodies as well as polyclonal serum from sensitized dogs. Here we report on a comparative blood typing study in dogs regarding their accuracy and ease of use.

We compared 3 commercially available DEA 1.1 typing assays; a gel column diffusion assay (GEL; DiaMed, Switzerland), a card-based agglutination test (CARD; DMS Laboratories, NJ), and an immunochromatographic cartridge (CHROM; Alvedia, France); the GEL and CHROM methods use the same monoclonal antibody. A polyclonal tube typing method (LAB; Midwest Animal Blood Services, MI) was used on 7 samples, when discrepancies were noted, and GEL and LAB typing results were identical. All assays were performed according to manufacturer's instructions. GEL and CARD reactions were graded from 0 to 4+ with $\geq 2+$ being considered a positive reaction. Definitive DEA 1.1 status was based on agreement between at least 2 typing methodologies.

Blood typing was performed on EDTA samples from 52 healthy potential blood donors and 39 sick dogs. Due to persistent autoagglutination 3 dogs could not be definitively typed by at least 2 methods; interestingly the CHROM test gave a DEA 1.1 negative result in all 3 samples. Of the remaining 88 dogs, 45% were typed as DEA 1.1 negative and 55% as DEA 1.1 positive by the GEL test technique and at least one other method. Identical typing results were obtained in 84% of cases by all methods. With the CHROM test 6 samples from DEA 1.1 positive dogs gave no appreciable DEA 1.1 banding. With the CARD test $\geq 2+$ agglutination was noted in samples from 5 DEA 1.1 negative dogs and $\leq 1+$ agglutination in 3 DEA 1.1 positive dogs (plus 1 inconclusive result due to autoagglutination). In total 8 CARD reactions were graded as fine or 1+ agglutination, of which 5 were DEA 1.1 negative and 3 were DEA 1.1 positive.

We conclude that the DEA 1.1 GEL test is a simple, accurate typing method to screen dogs in the laboratory. Moreover, there is generally good agreement between laboratory and in-clinic DEA 1.1 typing methodologies, when performed by an experienced individual. Rare false negative results are observed with the CHROM assay, whereas the CARD test produces some false positive and false negative results. The results of GEL and CHROM are most easy to interpret and archive.