

# STUDIES ON THE OCCURRENCE OF DOG ERYTHROCYTE ANTIGEN 1.1 IN DOG BREEDS OF KERALA, INDIA

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**ABSTRACT.** Sixty five dogs belonging to five different breeds were subjected to dog erythrocyte antigen 1.1 test to assess the occurrence of dog erythrocyte antigen 1.1 in Kerala state, India. Of the animals tested 51 were found positive for the antigen with considerable variation across breeds. Results of the present study indicate that the expression of DEA 1.1 in the Indian canine population may be at the higher end of the international prevalence.

*Keywords:* Dog erythrocyte antigen 1.1, blood transfusion, India

## INTRODUCTION

In dogs, eight different blood group systems are recognized internationally. However, from the stand point of blood transfusion, the importance lies in identifying those which are highly antigenic. Dog erythrocyte antigen (DEA) 1.1 is the most lytic factor in canine transfusion medicine and can cause significant transfusion reactions (Giger *et al.*, 1995, Helm and Knotenbelt, 2011). DEA 1.1 positive blood should not therefore be used for transfusion to DEA 1.1 negative recipient.

Perusal of literature did not reveal any studies with respect to the occurrence of DEA 1.1 in dog population of India. Therefore, this study was conducted to ascertain the occurrence of DEA 1.1 in dog population of southern Indian state of Kerala.

## MATERIALS AND METHODS

Sixty five clinically healthy dogs presented to the University Veterinary Hospitals of Kerala Veterinary and Animal Sciences University at Mannuthy and Kokkalai from different parts of Kerala state were subjected to the study. Dogs chosen were those aged between one year and nine years. Blood for the study was collected from cephalic or saphenous veins into 2ml EDTA vacutainers. The collected blood was immediately subject to study using the quick test DEA 1.1 kit of Alvedia, Limonest, France. The standard procedures for DEA 1.1 typing as per the protocol of the manufacturers were used.

**Table 1:** Dog erythrocyte antigen 1.1 in different breeds

Breed	Number of Animals Tested	DEA 1.1 Positive	DEA 1.1 Negative
German Shepherd Dog	17	12	5
Rottweiler	15	12	3
Labrador Retriever	15	13	2
Spitz	14	13	1
Doberman	4	2	2
Total	65	52	13

## RESULTS AND DISCUSSION

The sixty-five dogs in the study belonged to five breeds *viz.* German Shepherd Dog, Labrador Retriever, Rottweiler, Spitz and Doberman. All samples when subjected to DEA 1.1 kit study revealed a control band suggesting that the test ran successfully. In DEA 1.1 positive cases, in addition to the control band, another band appeared in the test card. In DEA 1.1 negative cases, only the control band appeared. The distribution of DEA 1.1 in the different breeds studied is as presented (Table 1).

Of the sixty-five animals, 52 (80%) were found positive for DEA 1.1. Considerable variation among breeds could also be observed. Among the breeds with reasonable numbers (more than 8 animals in the study), Spitz had the highest prevalence of 92.86% and German Shepherd Dog had the lowest prevalence of 70.59%.

The quick test DEA 1.1 kit of Alvedia has been found to be accurate (Giger *et al.*, 2005) Perusal of literature reveals considerable variation in the prevalence

of DEA1.1 across countries and breeds. A 33% to 73% variation in prevalence has been reported from mixed breeds across countries. As far as breeds are concerned, a low prevalence of 29% has been reported in Golden Retrievers in United States of America and a very high prevalence of 96.7% has been reported from Dalmatians in Croatia (Arikan *et al.*, 2009; Ferreira *et al.*, 2011). Results of the present study indicate that the expression of DEA 1.1 in the Indian canine population may be at the higher end of the international prevalence. Geographical variations in the frequencies of blood types may occur associated with the genetic origin of the animals, due to international travel and breeding (Esteves *et al.*, 2011). As seen in different breeds worldwide, the prevalence of DEA 1.1 in the Indian canine population also showed a considerable variation. As opined by van der Merwe *et al.*, (2002), understanding the breed differences in the prevalence of DEA 1.1 is useful in recruiting blood donors as DEA 1.1 might be the only antigen of clinical importance in canine transfusion medicine.

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