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ADENOSINE DEAMINASE ACTIVITIES IN THE SERA AND TISSUES OF ANIMALS AND THEIR CLINICAL SIGNIFICANCE

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The purpose of this study was to determine the activities of serum and tissue adenosine deaminase (ADA) and its isozyme (ADA2) in normal animals and to estimate the usefulness of ADA assays as a diagnostic indicator for veterinary medicine. The results obtained were as follows.

Serum ADA levels of cats were much higher than those of the other 6 species studied. Intermediate activity was obtained in rabbits. Dogs, cows, pigs, horses and rats had relatively low levels. There was no serum ADA2 activity in cows and rats. The serum levels of ADA2 were slight in dogs, cats and pigs, whereas in horses ADA2 predominated. It was found that there were no significant differences by sex or age in serum ADA levels of dogs and cats. ADA activity was high in the spleen, lymph nodes and thymus in most species. In some species intestine and lung were also highly active. The cerebrum, adrenal, muscle, kidney and liver had relatively low levels. There was no notably high ADA activity in tissue extracts of cats. ADA2 activity was high in the spleen and heart of some species. Tissue extracts from one horse predominantly had ADA2, the ratio of ADA2 to ADA was 40 % or more in all the tissues. Serum ADA levels of animals affected with various diseases were higher than those of the normal range. In dogs with hepatopathy and cats with FIP, serum ADA levels were found to be highly increased compared with normal values. In cows, ADA levels in sera that were positive for BLV were slightly higher than those that were negative. In animals which were in good condition, ADA levels were maintained at constant values. If the condition turned worse, ADA activity started to increase or to decrease, and was not steady. In some cases, it increased suddenly immediately before death.

From the results of this investigation, it was suggested that serum ADA levels were useful to obtain additional diagnostic information in the field of veterinary medicine.