HOKKAIDO UNIVERSITY

Title	SERUM ERYTHROPOIETIN LEVEL IN THE DOG AND ITS CHANGES DURING ANEMIA
Author(s)	IKEDA, Tomio
Citation	Japanese Journal of Veterinary Research, 37(2), 107-107
Issue Date	1989-06-20
Doc URL	http://hdl.handle.net/2115/3149
Type	bulletin (article)
File Information	KJ00002377252.pdf

Instructions for use

Hokkaido University Collection of Scholarly and Academic Papers : HUSCAP

SERUM ERYTHROPOIETIN LEVEL IN THE DOG AND ITS CHANGES DURING ANEMIA

Tomio IKEDA

Deparment of Veterinary Internal Medicine
Faculty of Veterinary Medicine
Hokkaido University, Sapporo 060, Japan

The serum erythropoietin (EPO) level in normal dogs was determined using an *in vitro* bioassay. In this method, spleen cells from anemic mice were employed as EPO-responsive cells. The spleen cells from the B6C3F1 mouse were more sensitive for the detection of serum EPO than those from the ICR mouse. This difference appeared to depend on the presence of a larger population of erythroid cells (EPO-responsive cells) in the spleen cells of the B6C3F1 mouse than in the ICR mouse.

In 21 normal adult (1–7 years old) dogs, the level of serum EPO ranged from 38.5 to 129.5 mU/ml, with a mean of 97.4±31.3 (mean±S. D.) mU/ml. Of these, the mean EPO level in 9 males was 108.9±28.2 mU/ml and that in 12 females was 88.4± 31.1 mU/ml. The mean level of serum EPO in 9 puppies (<2 months) was significantly higher (182.7±56.2 mU/ml), and that in 4 old dogs (>8 years old) was significantly lower than the normal level. In pregnancy, it was increased to 252.2± 80.5 mU/ml. The levels of serum EPO in other animals were as follows: horse, 55.2 ±8.9 mU/ml; cow, 41.4±10.3 mU/ml; and cat, 39.4±5.4 mU/ml. However, in some serum samples from cow and cat, and all samples from sheep and goats, EPO could not be detected. Thus, it was suggested that dogs have a higher serum EPO level than other animals tested.

In addition, the serum EPO levels in dogs dramatically changed during the period of experimental anemia. That is, in hemorrhagic anemia induced by successive bleeding, the serum EPO level increased along with the decrease in the hematocrit value. However, it rapidly fell to the normal level as soon as the bleeding was stopped. On the other hand, in experimental hemolytic anemia induced by feeding of onions, the serum EPO level showed a repeated up-and-down movement during the anemia. From these observations, it was considered that the serum EPO level is rapidly increased in response to a loss of erythrocytes from the circulation, but it immediately returns to its normal level after the loss of red cells was ceased. This suggests that a highly elevated EPO level may produce some serious conditions, such as erythrocytosis.