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Citation	Japanese Journal of Veterinary Research, 41(1), 24-24
Issue Date	1993-05-27
Doc URL	http://hdl.handle.net/2115/2416
Type	bulletin (article)
File Information	KJ00002377629.pdf



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A NEW STILBENE DISULFONATE-INSENSITIVE ANION EXCHANGE IN CANINE RETICULOCYTES

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Reticulocytes from dogs made anemic by phlebotomy exhibited an increased exchange of phosphate under saturated conditions that was 1.5- to 2.5-fold that in erythrocytes, resulting in a 2-fold higher concentration of phosphate ions in reticulocytes. Sixty to ninety percent of this phosphate exchange was insensitive to a stilbene disulfonate derivative, 4, 4'-diisothiocyanostilbene-2, 2'-disulfonate (DIDS), a potent inhibitor of band 3-mediated anion exchange, whereas almost of the exchange in erythrocytes was blocked in the presence of DIDS. Likewise, several other inhibitors which affect the anion transport via band 3 in erythrocytes had no effect on the DIDS-insensitive fraction of phosphate exchange in reticulocytes. Reticulocytes also revealed an enhanced transport of a fluorescent substrate, N-(2-aminoethylsulfonate)-7-nitrobenz-2-oxa-3-diazole in a DIDS-insensitive manner, indicating the broad substrate specificity of this anion exchange system.

Electrophoretic analysis of membrane proteins showed that band 3 in reticulocytes contained an N-linked oligosaccharide which was longer than that of erythrocyte band 3. However, removal of sugar chains of band 3 with some glycosidases had no effect on the characteristics of phosphate exchange in reticulocytes or erythrocytes.

These results demonstrate that reticulocytes possess an unidentified anion exchange system which is definitely different from that in erythrocytes, i.e. anion transport via band 3. Phosphate exchange via this DIDS-insensitive system rapidly decreased to almost zero within 2 days of *in vitro* reticulocyte maturation, while the DIDS-sensitive component was retained, suggesting a substitutive alteration of the anion exchange mechanism during erythroid differentiation and maturation into erythrocytes.