ABNORMAL HEMOGLOBIN IN A CALF (JAPANESE BLACK) WITH SEVERE POIKILOCYTOSIS

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The hemoglobin composition of one Japanese Black calf with severe poikilocytosis (PA), 2 months old, was examined. Anion-exchange high-performance-liquid-chromatography (HPLC) of the hemoglobin from normal calves revealed 5 distinct peaks, HbA, Hb2, Hb3, HbF and HbE. The peak of Hb2 in PA was markedly higher than in normal calves. In this study, the composition and properties of Hb2 were investigated.

Three types of hemoglobin (HbA, HbF and Hb2) prepared from hemolysate of PA were analyzed by a cellulose acetate electrophoresis method (urea-citrate buffer, pH 8.8, 200V, 2.5 hour) for separation of globin chains. The results showed that Hb2 consisted of two α globin chains, one β chain and one γ chain ($\alpha_2\beta\gamma$), while the globin compositions of HbA and HbF were $\alpha_2\beta_2$ and $\alpha_2\gamma_2$, respectively. On the other hand, the analysis of globin chains from Hb2 by reversed-phase HPLC indicated that Hb2 consisted of α and β globin chanins. This result indicated that globin chains of Hb2 consisted of two α globin chains, one normal β chain and one abnormal β chain. Furthermore, cellulose acetate electrophoresis (Tris-EDTA-borate buffer, pH 8.6, 150V, 1.5 hours) analysis for separation of hemoglobin types revealed that Hb2 had a different migration band from HbA, HbF and other types of bovine hemoglobin reported previously. These result suggest that Hb2 was an abnormal hemoglobin in Japanese Black cattle.