

Jatuporn Noosud 2011: The Comparison Study of Phenotypes and Biochemical Properties of Hemoglobin and Serum Protein Patterns in Thai Ridgeback Dog and Thai Bangkaew Dog. Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Apassara Choothesa, Dr.rer.nat. 200 pages.

The hemoglobin phenotypes of Thai ridgeback dogs and Thai bangkaew dogs revealed one type (one band) by cellulose acetate electrophoresis. Native-PAGE of purified solution by sephadex G-100 column showed one two-banded phenotype for each species. By using gel filtration column chromatography, the isolated hemoglobins of Thai ridgeback dogs and Thai bangkaew dogs were consisted of a single peak. The denatured hemoglobins migrated into two distinct bands by SDS-PAGE both in Thai ridgeback dogs and Thai bangkaew dogs. Subsequently, the accurate molecular weights of Thai ridgeback dogs and Thai bangkaew dogs hemoglobins were composed of five peaks, which were determined by using MALDI-TOF mass spectrometry. The retention times from the reversed-phase high performance liquid chromatography showed the β -globin chain signal and followed by the α -globin chain signal both in Thai ridgeback dog and Thai bangkaew dog hemoglobins. The results of nano-electrospray ionization mass spectrometry revealed that α -chain and β -chain of hemoglobin molecules were composed of 141 amino acids and 146 amino acids, respectively both in Thai ridgeback dogs and Thai bangkaew dogs. The pI values of both Thai ridgeback dogs and Thai bangkaew dogs hemoglobins showed the ranges between 7.0-7.9. The mean hematocrit values were $39.39 \pm 1.23\%$ for Thai ridgeback dog and $36.38 \pm 0.77\%$ for Thai bangkaew dogs. The mean hemoglobin concentration values were 13.75 ± 0.47 g/dL for Thai ridgeback dogs and 13.10 ± 0.32 g/dL for Thai bangkaew dogs. Serum protein electrophoresis for Thai ridgeback dogs and Thai bangkaew dogs showed six bands by cellulose acetate electrophoresis. These serum protein bands were separated on the basis of their electrical charge as follow: albumin, α_1 -globulin, α_2 -globulin, β_1 -globulin, β_2 -globulin and γ -globulin, respectively.

Student's signature

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