

Rachan Appaicha 2012: Study of Phenotypes and Biochemical Properties of Hemoglobin in Domesticated Asian Elephant. Master of Science (Animal Physiology), Major Field: Animal Physiology, Department of Physiology. Thesis Advisor: Associate Professor Apassara Choothesa, Dr.rer.nat. 92 pages.

The biochemical properties in hemoglobin of Domesticated Asian Elephant were studied. The mean values of packed cell volume and hemoglobin concentration were  $30.38 \pm 3.17\%$  and  $11.97 \pm 3.31$  g/dL, respectively. Cellulose acetate electrophoresis revealed one hemoglobin phenotype which was composed of one type of hemoglobin. Native-PAGE of purified hemoglobin by sephadex G-100 column also showed the same result. By SDS-PAGE, the denatured hemoglobin migrated as one band with the molecular weight of 16,595 dalton. The accurate molecular weight of hemoglobin by MALDI-TOF mass spectrometry was  $64,519 \pm 699$  dalton. The result of nano-electrospray ionization mass spectrometry revealed that the molecular weights and the amino acid compositions of  $\beta$ -chain and  $\alpha$ -chain of hemoglobin were 16,216 dalton, 146 residues, 15,578 dalton and 141 residues, respectively.

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Student's signature

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Thesis Advisor's signature