

Nikorn Thongtip 2008: Potential Factors Affecting Semen Quality in Asian Elephant (*Elephas maximus*). Doctor of Philosophy (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Associate Professor Anuchai Pinyopummin, D.Vet.Med.Sc. 115 pages.

The objectives of this thesis were included the working toward the development of genetic management strategies in Asian elephant in term of sperm biology and genetic diversity aspect. The first part was the working to determine the influences of (1) age (2) seasonality (3) and circulating testosterone (SrTest), triiodothyronine (SrT3) and tetraiodothyronine (SrT4), as well as seminal (4) testosterone (SpTest), zinc (SpZn) and protein (SpTP) on semen quality in the Asian elephant. The results indicate that age and seasonality had influence on semen characteristics in the Asian elephant. Furthermore, age also had influence on thyroid hormones. The second part was the working to test the effects of pentoxifylline (PTX) on the enhancing ability of elephant sperm motility and motion parameters by using computer-assisted sperm analysis (CASA). The results revealed that ejaculated Asian elephant semen treated with PTX did not significant increase percentage of sperm motility and motion parameters in both poor- and low-motile groups. The third part was the working to evaluate and select microsatellite markers for an identification and parentage test of Asian elephants (*Elephas maximus*). The results showed that sixteen microsatellite markers were success to amplify. The sequencing datas confirmed their homology of tandem repeat with previous reports. All positive markers will be used for a parentage and identification test and will be used together with the law enforcement for controlling illegal capture of wild baby elephants in Thailand. In conclusion, this thesis has conducted a study that will improve our understanding of the reproductive biology of Asian elephant bulls and developed the preliminary tool for helping in elephant parentage and identification test. The knowledges from this study will be used to fullfil the elephant conservation program in Thailand.

NIKORN THONGTIP

Student's signature

Anuchai Pinyopummin

Thesis Advisor's signature

28, May, 2008