

Results report

1 . Title of Research and Development :

The project for epidemiological studies on animal protozoan diseases in Mongolia and development of effective diagnostic measures.

2 . Principal Investigator : Noboru Inoue

(Director General, Professor, National Research Center for Protozoan Diseases, Obihiro University of Agriculture and Veterinary Medicine)

3 . Counterpart Principal investigator : Badgar Battsetseg

(Director, Institute of Veterinary Medicine (Mongolia))

4 . Results of Research and Development:

(1) *Trypanosoma equiperdum*, a causative agent of dourine, was successfully isolated and imported to Japan under permission from Japan, Ministry of Agriculture. *T. equiperdum* is classified under subgenus *Trypanozoon*, however, this species classification of *Trypanozoon* is still a controversial topic. There have been a limited number of reference strains of *T. equiperdum*. In addition, some of them were speculated as misclassification of *T. evansi*, therefore, a new *T. equiperdum* strain directly isolated from the genital mucosa of clinically and parasitologically confirmed infected horse is strongly needed. Isolated *T. equiperdum* from the urethral tract were directly cultivated using soft agarose media. The phylogenetic analysis of 18S rRNA and ITS showed that this isolated trypanosome was classified in *Trypanozoon* clade. Only NADH-dehydrogenase subunits 4 and 5 maxicircle kinetoplast DNA region was amplified by PCR in maxicircle DNA region. We concluded that our isolated trypanosome is the first confirmed *T. equiperdum* in Mongolia and named it “*T. equiperdum* IVM-t1” as a new *T. equiperdum* reference strain. Successful isolation of a new *T. equiperdum* did not achieved last 30 years. Thus our *T. equiperdum* IVM-t1 is highly important not only in this project but also the scientific community in the world. Further analysis of the parasite genotype, full-genome, and transcriptome provide essential information for development of new diagnostics, vaccines and treatment drugs.

(2) Training of pathological anatomy for counterpart scientists was carried out, and horse necropsy manual was written in English and Mongolia.

(3) The ICT device and other equipment for development of the ICT diagnostic tests were installed into Institute of Veterinary Medicine. Scientific seminars were hosted, namely The 2nd JCC (June, 20, Ulaanbaatar, Mongolia), SATREPS Seminar for Local Veterinarians (July, 2, Dornogovi, Mongolia) and SATREPS Scientific Seminar (Sep. 14-21, 2015, Obihiro, Japan).

(4) Over 6,323 animal blood samples (1,965 horses, 920 cattle, 264 yaks, 319 camels, 1,402 sheep and 1,453 goats) were collected in the field work. Prevalence of protozoan diseases is investigating in order to publish disease prevalence map for local veterinary officers.

(5) A young Mongolian scientist was invited from Feb. 1, 2016 to May 30, 2016 in order to conduct cooperative research works on in vitro cultivation, antigen gene cloning and epidemiological analyses of animal protozoan diseases.