

FACILITIES, MANAGEMENT AND INTERNATIONAL ACCREDITATION OF MINIATURE PIG PROVISION IN TAIWAN

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ABSTRACT

The indigenous minipigs, Lanyu breed, were introduced from Lanyu Islet to Taitung Animal Propagation Station (TAPS) in 1980 for germplasm conservation and breeding projects for biomedical research. In 2008 TAPS was appointed the provider of minipigs as laboratory animals. For the purpose to meet the demand of both quality and quantity in laboratory minipigs for the biomedical research and the biotechnology industry, TAPS was requested to establish a national provision system of the clean conventional minipigs. Since 2008, ongoing renovations and modifications were carried out, the standard operation procedures were established and implemented by staff education. Health monitoring is carried out per season, the RFID technology is applied to ensure reliable identification with entire records of the individual pig. Animal welfare is also a major concern and enhanced by housing enrichment and humane management. Furthermore, TAPS dedicated themselves to earn the AAALAC (Association for Assessment and Accreditation of Laboratory Animal Care, International) accreditation and was awarded “Full Accreditation” on the 25 th of February, 2013.

Key words: Miniature pig, Biomedical research, AAALAC Accreditation

RENOVATION OF FACILITIES

The original facilities of TAPS were built for commercial pig production in 1974. The ongoing renovations of the facilities were carried out since 2008. In 2009 the commercial pig production was ceased so that all the facilities would be renovated for minipig production and care programs.

Farrowing houses

There were two farrowing houses were renovated in 2009 and 2011. Both sides of each farrowing house were divided into five partitions and the indoor waste ditches were moved outdoor that help to practice batch farrowing management and improve disease control.

Growing houses

We also renovated two growing houses from opening penning system to batch management system in 2011 that contribute to keep clean conventional production more efficiently.

Breeding houses

There were two breeding houses were renovated in 2011 and 2012. The heat insulating roofs, canvas, fly screen and music speakers were set in the facilities that provide breeding herd with more comfortable environment.

Shipping facility

The animal shipping facility was built in 2010. Before then there was no proper place for animal temporary keeping before shipping and it was very inconvenient to ship animals, especially at nights and rainy days. This shipping facility is also the location of the holding emergency evacuation.

New farrowing pens without crates

The traditional farrowing crate is used to prevent piglets from being laid or stepped on by the sow in traditional pork husbandry. But it limits the movement of sows and often causes stereotypical behaviors and frustration. We think minipigs are good in maternal care than commercial swine. So we decide to renovate the penning system without crate to improve the welfare of farrowing sows.

IMPROVEMENT ON MANAGEMENT

Standard operation procedures (SOP)

The establishment of standard operation procedures were referred to the Guide for the Care and Use of Agricultural Animals in Research and Teaching, Guide for the care and use of laboratory animals, and AVMA Guidelines on Euthanasia, for IACUC functions, animal care programs and euthanasia, and which have been implemented by periodically educating and training the TAPS staff such as pig tagging, occupational safety and health, holiday care, emergency response, pig shed cleaning operations, pig feeding management, management for various pig housing, vaccine immunization, disease surveillance, medical management, pig surgery, pig euthanasia, materials and supplies management, etc..

Institution animal care and use committee (IACUC)

The IACUC is formed appropriately and functions well which should conduct internal inspections on both procedures and facilities once every half a year, organize at least 3 meetings each year, review laboratory animal application forms, and report inspection and review results.

Animal identification

Animal identification of minipigs is carried out by using RFID ear tagging and devices. The records will be checked and archived, then upload to the Information Management System which is not only for internal use, but also convenient to biomedical users to get the individual records and useful information in both Chinese and English from our service website (<http://minipigs.angrin.tlri.gov.tw/>).

Animal transportation

Before 2009 biomedical users must ship their animals by themselves or transferred by rail. It caused huge inconvenience and the condition of transportation was not good for animal such as the weight limit, service site restriction and there's no air conditioning in freight car. Therefore, the specific container which has its own electricity generator was designed to solve these problems, so it can supply power to air conditioner in summer and heater in cold weather. Meanwhile the drinking water is also provided to the animals during transportation. Therefore, the animals can be delivered to users directly under reasonable condition all of Taiwan.

ANIMAL WELFARE PROMOTION

Environmental enrichment

The appropriate music is chosen and broadcasted in all facilities every day to pacify the staff and animals. Meanwhile, durable toys were designed by ourselves and given to growing pigs for playing to prevent pigs from boredom, stereotypical behaviors and tail biting.

Administration of anesthesia and Analgesia to castration

Only veterinarians and those who trained and qualified by veterinarian are allowed to perform surgery of castration. In particular, TAPS is the first one and the only one unit performs castration applying anesthesia and analgesia so far in Taiwan.

Improvement on water quality

The source of drinking water of TAPS is from mountain spring water which quality is very unstable. The water treatment facilities and sealed reservoir were accomplished in 2011 that improves the hygiene quality of water and animal health welfare significantly through filtration and chlorination.

Euthanasia

The euthanasia procedure was refined by finding a proper place, applying a gentle restraint that keep animal tranquil, and validating the performance of the electrocution device that not only make the process in a quick and peaceful way, but also protect our workers' safety.

APPLICATION FOR AAALAC ACCREDITATION

For the purpose of promoting both animal qualities and care programs to meet international standards, all the staff of TAPS dedicated themselves to earn the AAALAC accreditation.

Introduction of AAALAC

AAALAC International is a private, nonprofit organization that promotes the humane treatment of animals in science through voluntary accreditation and assessment programs. AAALAC stands for the "Association for Assessment and Accreditation of Laboratory Animal Care." More than 880 companies, universities, hospitals, government agencies and other research institutions in 37 countries have earned AAALAC accreditation, demonstrating their commitment to responsible animal care and use. These institutions volunteer to participate in AAALAC's program, in addition to complying with the local, state and federal laws that regulate animal research.

For some, animal research is a controversial topic. But like others in the animal welfare arena, AAALAC endorses the use of animals to advance medicine and science when there are no non-animal alternatives, and when it is done in an ethical and humane way. (From <http://www.aaalac.org/about/index.cfm>)

Application

After almost three years of preparation for improving facilities, managements and animal care programs, TAPS completed the program description (PD) and submitted the application to AAALAC office in July 2012. The contents of PD including four major parts as following:

1. Animal use and care program management and oversight
2. Animal environment, housing and management
3. Veterinary care
4. Physical plant

Site visit

AAALAC office assigned a site visit team, one Council member and one ad hoc specialist, to TAPS on 6th November 2012. The whole procedure including entrance briefing, PD review, facility tour, interview with IACUC & OHS members, document review, executive session and exit briefing, and that lasted about 10 hours in this case. At the exit briefing site visit team shared their key findings.

Post site visit communication (PSVC)

After the visit, TAPS kept connecting with the site visit team by e-mail positively and frequently to respond and explain their findings and concerns about the animal programs before the site visit submitting the final report to the Council on Accreditation.

Determination of the accreditation status

Council meeting was held in January 2013 to consider and assess the institution's reports, and to determine the accreditation status. Finally, TAPS was informed to earn the "Full Accreditation" on 25th February 2013. Thereby, TAPS became the first laboratory animal supply unit, transformed from an agriculture animal production unit, in Taiwan to receive full AAALAC accreditation. This not only helps to enhance the international competitiveness of the domestic biomedical research, but also reaches a milestone for the long-term Lanyu minipig project.

CONCLUSION

TAPS, LRI regards the indigenous minipigs as the most precious genetic resource which definitely deserve good care, management and respect for being utilized as laboratory animals, and believes those accomplishments will bring TAPS and minipig genetic resource with sustainable development.

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REFERENCE

AAALAC website: <http://www.aaalac.org/index.cfm>



Minipig breeds selected for laboratory use.



TAPS, LRI earns the AAALAC accreditation