

Studies on assisted reproductive technology
in Amur leopard cats

Abstract of Doctoral Thesis

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Small wild cats of the Felidae family indigenous to Japan, Tsushima leopard cats and Iriomote wild cats, are on the verge of extinction, as are many wild cats of the Felidae family. To protect these wild animal species, it is necessary to introduce various artificial reproductive technologies (ART) as in-situ conservation, in addition to ex-situ conservation of habitats, but these techniques for small wild cats of the Felidae family, such as Tsushima leopard cats, have not yet been established.

Thus, using a subspecies of leopard cats belonging to the same species, Amur leopard cats, to which Tsushima leopard cats belong, as a model of Tsushima leopard cats, we performed a series of study to establish ART techniques.

The conditions of a method collecting semen from male Amur leopard cats were investigated using the transrectal electric stimulation method and it was clarified that semen with favorable characteristics capable of being used for artificial insemination (AI) can be collected by inserting a rectal probe assembled with electrodes into a single bundle on the ventral side parallel to the rectum at a site about 6.5 cm from the anus and applying stimulation at 1-4 V in September-April.

When semen storage was investigated, it was possible to store semen retaining favorable characteristics by either cryopreservation or low-temperature storage. The characteristics of sperm collected from the cauda epididymis excised after the animal died and those after freezing and thawing were also investigated. The sperm characteristics were favorable and these types of semen may be sufficiently applicable for AI.

Female Amur leopard cats showed no marked estrus sign in captive breeding and it was difficult to identify the optimum time of mating. Thus, methods to induce follicular growth and ovulation by eCG and hCG administrations to female Amur leopard cats in the non-breeding season were investigated. Although it has not been investigated in this animal species, each condition could be set. When surgical intrauterine injection of semen (AI) collected from a male Amur leopard cat was performed 20-22 hours after hCG administration in 2 female Amur leopard cats with grown follicles, both animals became pregnant. Early embryonic death occurred in one, but pregnancy was maintained in the other and a normal newborn could be acquired. Birth of a newborn by artificial reproduction in this animal species has not previously been reported and this was the first success in the world.

These techniques may be useful for the reproduction of not only Amur leopard cats but also small wild cats of the Felidae family on the verge of extinction and help increasing the currently reduced population.