closely related among the four isolates, although
the Japanese RHDV isolate had six unique amino
acid changes in the range from amino acids 299 to
480 in the VP60 region. I concluded that the
RHDV isolates of four different countries share
highly conserved nucleotide and amino acid sequ-
ences in the VP60 region, while there may be an
internal hypervariable region as reported for
feline calicivirus.

Annual and perinatal changes in fecal testosterone concentrations
in Ezo Sika deer (*Cervus nippon yezoensis* HEUDE)

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The testosterone concentrations in both the
feces and blood of Ezo Sika deer were examined
during the annual and the perinatal periods. Moreover, the influence of preservation methods
on the changes in fecal testosterone concentra-
tions was also examined.

The subjects were stags (total n=4) and
does (total n=13) kept at the Haiji farm in
Hokkaido. The fecal and blood samples were
collected from August, 1994 to August 1996.
The fecal samples were frozen immediately after
evacuation. The fecal and blood testosterone
concentrations were assessed by radioimmuno-
assay.

When the values were transformed to com-
mon logarithms, correlation was shown between
the testosterone concentrations in the feces and
the blood collected in the stag (n=1) and does (n
=5) during the annual season.

In the stag, the testosterone concentrations
in both the feces and blood sharply increased late
in August and peaked at the pre-breeding season
(early October). They were decreased in
November regardless of breeding behaviors that
were maintained until February. In does, the
testosterone concentrations in both the feces and
blood were at lower levels than in the stag. But
the fecal testosterone concentrations of the does
showed small changes during the breeding season
(from October to December). In parturient
does (n=4), the fecal testosterone concentra-
tions increased before parturition. In one non-
parturient doe, no change was shown during the
same period.

In the pregnant does (n=9), the fecal
testosterone concentrations increased from ab-
out six weeks before parturition and decreased
rapidly after parturition. They were higher than
in the non-pregnant does (n=3) and the stags (n
=3) during the same period.

The fecal testosterone concentrations in-
creased when the feces were preserved for 48
hours at room temperature compared to those
immediately preserved at −40°C after the eva-
cuation. The testosterone concentrations were
not increased when the feces were preserved
with ethanol or antibiotics for 48 hours at room
temperature.

In conclusion, the fecal testosterone concen-
trations were correlated (male r=0.93, female r
=0.71) to those of blood in Ezo Sika deer. Moreover they showed similar patterns during
the annual cycle. The testosterone concentra-
tions increased during the pre-partum period. It
might be possible to predict the time of parturition in does by detecting an increase in the fecal testosterone concentrations. It is suggested that the feces must be preserved with ethanol or antibiotics to prevent an increase in the testosterone concentrations during the preservation period if feces are to be kept at room temperature for a prolonged period.

Behavioral development of foals during the preweaning period in Thoroughbred (Equus caballus): spatial and nearest neighbor relations, and day-time time-budgets

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The aim of this study was to examine the developmental changes of the foal's behavior in Thoroughbreds. Nine colts, 13 fillies and their mares were observed from May to October in 1995. Foals were delivered between May 2 and June 6, and weaned by the end of October. Data on the distance between the foal and mare, the foal's nearest neighbor, and daytime time-budgets were recorded by scan sampling for 2 hours per week. The results are as follows:

(1) During the first 2 weeks: Foals remained very close to their mares and had little contact with other horses. The amount of time foals spent on nursing, recumbency rest and solitary-play peaked during this period.

(2) During the first 2 months of life: As foals matured, they spent more time at greater distances from their mares, and had contact with other horses, especially with other foals. Nursing time decreased sharply and feeding time increased. Mutual-grooming and social-play with other foals increased while solitary-play decreased. Recumbency rest decreased and upright rest increased, although recumbency rest was more popular than upright rest.

(3) During the third month of life: Developmental changes of foals were interrupted in spatial relation, feeding time and recumbency rest time. Foals engaged in upright rest longer than in earlier months, although recumbency rest was still more popular. Mutual-grooming peaked during this period.

(4) During the fourth and fifth months: Foals spent more time at greater distances from their mares. Feeding time increased and recumbency rest time further decreased. Mutual-grooming and upright rest time decreased.

(5) Colts spent more time in social-play than fillies. There were no prominent differences in other behavior between the sexes.

(6) Mares didn't exhibit the recumbency response. Namely, mares were closer to their foals when foals were upright than when they were recumbent during the first 2 months of foal life.

In summary, behavior of foals changed evidently during the first 2 months, and between the fourth and fifth month of life. During the third month of life (July-August), the behavioral change was interrupted.