

Effect of feeding a licorice extract to Japanese Black cows on embryo production performance after superovulation treatment

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Objective

The objective was to determine the effect of feeding a licorice extract that contains glycyrrhizic acid, which is known to have a liver function enhancing effect, on embryo production performance after superovulation treatment in Japanese Black cows.



Material and Methods

Japanese Black breed cows (n=136) that had calved one to four times and had normal uteri as seen by ultrasonography after at least 40 days from the last calving were used as test animals.

Animals in the treatment group (n=90) were continuously fed 20 g/day/head of a licorice extract (KANZOU, Fabric Onishi Co.,Ltd. with at least 13% glycyrrhizic acid content) for 60-90 days until ova/ embryos were collected.

The control group (n=46) received no KANZOU from the day of the last calving until ova/embryo collection.



A licorice extract (KANZOU, Fabric Onishi Co.,Ltd. with at least 13%glycyrrhizic acid)

A total of 20 AU of follicle stimulating hormone (FSH) was given intramuscularly twice a day, morning and evening, for 3 consecutive days (dose step down: 5 AU×2, 3 AU×2 and 2 AU×2) as superovulation treatment to the cows at 8-11 days post-estrus in both groups.

Prostaglandin F2α (Pronalgon F) 25 mg and 15 mg were respectively administered in the morning and evening on the third day of FSH administration.

Artificial insemination was done at 12 hours and 24 hours after the start of estrus and embryos were collected using a uterine reflux method on the 7th day post-estrus.

The mean numbers of ova/embryos collected and transferable embryos, and the mean embryo quality scores (according to the IETS guidelines) in the treatment and control groups were compared by t-test.

Chi-square test was used to compare the proportion of transferable embryos in the two groups.

Results

There was no significant difference in the mean number of ova/embryos retrieved between the treatment group (21.7±11.8) and the control group (15.8±11.3), although the former tended to give more ova/embryos.

There was significant difference (p<0.05) in the mean number of transferable embryos collected between the treatment group (13.1±8.3) and the control group (8.1±5.3).

The treatment group (1.6±0.4) was also significantly superior (p<0.01) to the control group (2.2±0.6) in the mean embryo quality score.

In the proportion of transferable embryos, the treatment group (60.3±26.4%) was also significantly better (p<0.05) than the control group (51.2±26.0%).

Conclusion

The results suggested that feeding a licorice extract to Japanese Black cows for 60 days or longer improves the quality of embryos obtained after superovulation treatment, and leads to an increase in the mean number of transferable embryos per cow.

Table1. Embryo production performance after superovulation in Japanese Black cows with/without feeding a licorice extract

Feeding Licorice	No.of Donor Cows	The mean No. of embryos/ova	The mean No. of transferable embryos(%)
No	46	15.8	8.1 ^a (51.2%) ^a
Yes	90	21.7	13.1 ^b (60.3%) ^b

^{a,b}Values with different superscripts in the same row differ (P<0.05)

Table2. Embryo quality score of transferable embryos after superovulation in Japanese Black cows with/without feeding a licorice extract

Feeding Licorice	No.of transferable Embryos	The mean embryo quality score ±SD (IETS guidelines)
No	374	2.2 ± 0.6 ^a
Yes	1182	1.6 ± 0.4 ^b

^{a,b}Va lues with different superscripts in the same row differ (P<0.01)