

Vol. 1, No. 1 June 2009

Treating Infertile Milk Cows by Traditional Chinese Medicine

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Abstract

The infertility of milk cow is a world problem with high incidence rate. Reportedly, in the world dairy industry, the proportion of the infertile milk cow was about 15% in the total mature cows (Donald L B, 1978, P.309), and some others thought this number achieved about 30% according to the statistics (Bulman D C, 1980, P.177-188). In US, there are 12%~19% cows which are eliminated through selection because of sterility and breeding diseases every year, and this number achieves above 40% in all unqualified cows (Jiang, 1990, P.38-41). In China, the infertile rate of mature cows achieves above 25%, and the rate in some cattle farms with imperfect management and bad technical conditions even achieves above 40% (Jiang, 1990, P.38-41). According to the statistics, in a cattle village in the northeast, there were 62 infertile cows in 212 cows, and the infertile rate achieved 29.25%, and in the region of Jinan, Shandong, there were 342 mature cows in 5 collective cattle farms, one civil cattle farm and one cattle breeding village, and the amount of the infertile milk cow achieved 97, i.e. 28.36% of the total amount of mature cows. In the region of Shihezi in Xinjiang, the infertile rate was 22.5%, and the infertile rate in Fujian Province achieved above 10%. In recent years, according to Chinese traditional medicine, Chinese veterinary scientists have accumulated abundant experiences to prevent and cure the infertility of milk cow, and explored the pharmacology of the function of Chinese traditional medicine.

Keywords: Traditional Chinese Medicine, infertility

1. Clinical trial

1.1 About ovarian infertility

The ovarian infertility means female ovarian dysfunction, abnormal estrus cycle and low breeding ability, and it includes ovarian hypo-function (inactive ovary), durable lutein and ovarian cyst. The ovarian hypo-function generally includes delayed ovulation, out of heat in a long term in the post partum or obscure estrus representation. Though some females have obvious estrus, but they don't ovulate, so they have not the ovulation, and the form and character of the ovaries change little by the rectal examination, and the ovarian follicle or the lutein can not be touched, and sometimes one piece of very small luteal vestige can be touched in the one side of the ovary. When the pregnant lutein or the periodic lutein exceeds the normal time limit but still keeps the function, it is called as the durable lutein which can also excrete progesterone, restrain the growth of ovarian follicle, make the estrus cycle stop circulating and induce infertility. The ovarian cyst can be divided into follicular cysts and luteal cysts. The follicular cysts are formed by the epidermis denaturation, ovarian follicle connective tissue hyperplasia and thickening, oocyte death, follicular fluid unabsorbed or increased. The luteal cysts are formed by the epidermis luteinizing of the un-ovulated ovarian follicle wall. According to clinic symptoms, Chinese veterinaries generally divide it into the type of the insufficiency of yang and the type of qi depression to blood stasis, and adopt kidney in vigor-rating, promoting blood circulation by removing blood stasis, enriching the blood and regulating menstruation and other treatment methods. In recent years, Chinese veterinaries have acquired significant developments to apply Chinese traditional medicines and acupuncture to treat the ovarian infertility of milk cows.

- (1) Song Dalu used self-made Chinese traditional medicine "promoting pregnant perfusate" to treat 220 cases with the inactive ovary infertility and 209 cases with the durable luteal infertility in five years, and the results indicates the medicine could promote the estrus and ovulation for ill cows effectively, and the estrus rate achieved 94.9%, and the fecundation rate achieved 79.4%.
- (2) Jiangsu Academy of Agricultural Sciences used herba epimedii, actinolite, medlar, dodder, psoraleae, rehmannia glutinosa and other Chinese traditional medicines with function of kidney in Vigo-rating and many Chinese traditional medicines with the function of promoting blood circulation by removing blood stasis such as angelica, red paeonia and

motherwort to prepare the compound Xianyang soup which was used to treat the inactive ovary infertility and durable luteal infertility for milk cows, and for cows with the cold symptoms such as white mouth and hypercatharsis, added the nutgrass galingale and cinnamon to warm the kidney, and for the cows with durable lutein symptom, added Xishu, rhizome sparganii, safflower and peach kernel to increase the function of promoting blood circulation and removing blood stasis, and treated 297 ill cows, and the estrus rate achieved 94.6%, and the fecundation rate achieved 86.1% (Wang, 2005).

- (3) Chinese Veterinary Research Institute of Chinese Academy of Agricultural Sciences took herba epimedii, actinolite, dodder, angelica, astragalus mongholicus and motherwort to affuse uterus to experimentally treat 141 cases, and the estrus amount was 123, and the pregnant amount was 116, and the conception rate was 82.27%.
- (4) Ma Yanfeng et al used the compound epimedii pregnant promoting soup to treat the ill cows with inactive ovary, and the effective rate of estrus and ovulation achieved 80.8%, and the hybridization and fecundation rate was 80.0%, and the effective rate of estrus and ovulation for ill cows with ovary trophy achieved 50.0%, and the hybridization and fecundation rate was 50.0% (Jiang, 1999, 41-43).
- (5) The Farming Veterinary Research Institute of Shandong Provincial Academy of Agricultural Sciences used the pregnant promoting formula (composed by motherwort, safflower, atractylodes macrocephaia, nutgrass galingale rhizome, alisma orientale, peak kernel, rehmannia glutinosa, angelica and poria) to treat the un-estrus and abnormal estrus of cows combining ith tristeronum compositum, and for the 262 tested cows in two test group, the amount estrus cows after treatment achieved 234, and the estrus rate achieved 89.31%, and the fecundation amount after semen transmission for estrus cows achieved 127, and the fecundation rate achieved 54.27% (Ma, 2005).
- (6) Wang Hongyan used drugs for regulating blood conditions to treat the infertile milk cows and obtain the curative effects which respectively were 87.5%, 100% and 76.9% (Wang, 2005).
- (7) Yang Guolin et al used the point injection of Chinese traditional medicine injection (formula 1) and the uterus perfusion (formula 2) to treat ovarian infertile 232 cows, and the result indicated that the formula 2 (uterus perfusion) had better treatment effect, and this formula was used to treat 141 ill cows, and the estrus rate achieved 87.23%, and the pregnant rate achieved 82.27% (Yang, 1997, P.3-5).
- (8) Wu Naike et all applied estrus promoting formula to treat cows with un-estrus or abnormal estrus, and the estrus rate achieved 89.31%, and the fecundation rate after semen transport achieved 54.27%, and the effect was good (Wu, 2000).

1.2 About endometritis

Chinese veterinary thought that the endometritis belonged to humid heat category, and it meant that poisons and dirty thins entered into the uterus, which made the blood stasis stagnate in the uterus, and after a long time, stasis became into heat and the disease came on. For the treatment of endometritis, we should adopt the method from inside and outside, i.e. in the interior, regulating the blood conditions, and in the exterior, clearing wet heat and fighting bacterium and diminishing inflammation, and only the method used from inside and outside can acquire good and quick effects.

- (1) "Motherwort biochemical formula (composed by 120g motherwort, 75g angelica, 30g Sichuan ligusticum wallichii, 30g peach kernel, 15g rhizome zingiberis and 15g liquorice)" was used for 78 ill cows with unclear lochia after 7 days, 75 cows were cured, and the cure rate achieved 96.15%, and it was used for 66 ill cows with unshed embryonic memebrance, 62 cows were cured, and the cure rate achieved 93.94%, and it was used for 42 ill cows with endometritis, 40 cows were cured, and the cure rate was 95.24% (Yang, 2007, P.47-48).
- (2) According to Li Chengmin's report, for the milk cows suffering endometritis, "pregnant treasure (composed by motherwort, scutellaria baicalensis, sanling, rhubarb and red paeonia)" was taken orally by one dosage (200g/cow) when the cow was in rut, and after 4~6 hours, transported semen to the cow, and if the milk cows was not pregnant, used the drug and transported semen again. For the ill cows with chronic catarrh endometritis, used 1~2 dosages drug with 5-days-interval, and after estrus occurred, used 1~2 dosages drug and transported semen after 4~6 hours. For the ill cows with chronic purulent endometritis, we used 2~3 dosages drug with the interval of 5~7 days for each dosage. In the test, there were 4953 ill cows where the ill cows with chronic catarrh endometritis were 3242, and the 1~2 dosages "pregnant treasure" were used, and availability rate was 100%, and the cure rate was 98.64%, and after treatment, there were 2823 cows became pregnant through semen transportation, and the fecundation rate achieved 88.27%, and all ill cows with concealed endometrium were cured, and after treatment, there were 495 cows to be pregnant through semen transportation, and the fecundation rate achieved 87.92%, and 905 cows in 1148 ill cows with chronic purulent endometritis were cured after taking 3 dosages drug, and the cure rate achieved 78.8%, and the fecundation rate achieved 63.48%.
- (3) According to Xue Zhicheng's report, the soup composed by 70g phellodendron, 40g plantain, 35g pilosula, 50g poria, 50g atractylodes macrocephaia, 50g comb grass, 50g motherwort, 40g cuttlebone, 30g liquorice, 40g safflower and 30g red paeonia decocted and affused one dosage one day could cure the ill cows with purulent endometritis.

- (4) According to Li Dechang's report, took 120g kuh-seng, 50g rhizome coptidis, 80g scutellaria baicalensis, 80g yellow cypress and pounded to pieces, and decocted them with water for half hour and filtrated, and decocted the dregs for 20 minutes, combined two liquids and concentrated to 500mL, and to prevent deteriorating, seethe the liquid once one day, and the liquid could be used to cure the endometritis of cows, in 21 ill cows, 18 cows were cured after 1~3 dosage, and the cure rate was 85.7%, and except for 5 cows were washed out because of other diseases, 12 cows in other 13 ill cows became pregnant, and the pregnant rate achieved 92.3%.
- (5) According to Zhu, Qisu's report, "uterus cleaning oil" was used to treat 33 cows with chronic endometritis, and 25 cows were cured, and the fecundation rate achieved 76%, and the average drug use times were only 1.74 times/cow, and the dosage was $30\sim50$ mL/cow once.
- (6) The clearing uterus and diminishing inflammation suspensions (mainly composed by bomeol, sodium sulphate, yellow cypress and natural indigo) could be used to prevent the endometritis for post partum cows, in the 231 cows, the fecundation rate achieved 93.4%, and the fecundation rate in the first estrus term was 62.7%, which respectively were enhanced the fecundation rate for 7.0% and 10.2%, and the post partum initial estrus interval and the post partum another fecundation time respectively were enhanced by 20.1 days and 9 days. There were 1307 cows with endometritis to be treated, and the efficiency rate achieved 95.04%, and the fecundation after cure achieved 90.8%. And for 140 cows using Western medicines, the efficiency rate achieved 86.4%, and except for 9 cows washed out after cure, there were 112 cows to be in rut, and the fecundation rate achieved 80.4%, and the efficiency rate and the fecundation rate of the clearing uterus and diminishing inflammation suspensions respectively were enhanced for 8.54% and 10.4% (Yang, 2007, P.47-48).

2. Research of mechanism

At present, the mechanism research about treating the infertility by Chinese traditional medicines has achieved certain level. Jiang Zhaochun et al used "compound Xianyang soup" for 3 cows with durable lutein taken orally, and tested the progesterone content in the blood serum before and after treatment, and before the treatment, the progesterone contents respectively were 3mg/mL, 5.34mg/mL and 5.03mg/mL, and they were in rut respectively in the second, seventh and eighth day, and their progesterone contents all reduced to about 0.1mg/mL, and after estrus, the progesterone contents gradually increased to respectively 0.28mg/mL, 0.86mg/mL and 2.01mg/mL respectively in the second, fourth and fifth day after ovulation. After this formula was applied, the uterus angle exterior diameter, uterus and ovarian weight were obviously higher than the comparison group, Jiang also observed that the growth follicle of ovary increased, and the lutein occurred in the ovary, and the interstitial cells increased, and the endometrium was incrassate, and the uterine cavity became bigger, which indicated that this formula possessed the function to promoting oestrus, ovulation and pregnant for female animals. Chinese Veterinary Research Institute of Chinese Academy of Agricultural Sciences respectively implemented multiple tests including blood test, cell growth of cervices secretion, separation checkup of pathogeny microbe, drug sensitive test, pathology observation, microelement measurement, enzymoimmunoassay latex progesterone test, blood rheology observation, biopsy organization ultrastructure obvervation and the function test of "clearing uterus liquid" to hysteromyoma for the "clearing uterus liquid" made by the institute, and studied the anti-inflammation and immunity mechanism function in the "clearing uterus liquid", the effective component separation and picking of the motherwort, and the endometritis animal model copy. The result indicated the various indexes of the cured cases could be rapidly or basically recover to normal levels. The "clearing uterus liquid" possessed many good functions such as anti-inflammation, immunity restriction, bacterium restriction, promoting blood circulation by removing blood stasis, and promoting shrinking uterus.

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