

THERAPEUTIC EFFICACY OF LUGOL'S IODINE AND AUTOLOGOUS PLASMA ALONG WITH HERBAL ECBOLICS IN COW WITH UTERINE INFECTION COWS

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ABSTRACT

The present investigation was conducted to study the effect of intra uterine infusion of lugol's iodine and autologous plasma along with the herbal ecboic tablets on 72 animals. On basis of the pH, PMN cell count and White Side Test diagnosis of all cases were confirmed. All cases were categorized in Group-I, Group-II and Group-III. They were treated with 2 per cent lugol's iodine in distilled water and autologous plasma @30ml, intrauterine route along with herbal ecboic tablets orally in group-I and II, respectively. Group- III was kept as control. Before treatment it was observed that pH of Cervico vaginal mucus (CVM) was 8.12 ± 0.06 and 8.13 ± 0.07 which decreased after treatment to 7.37 ± 0.06 and 7.55 ± 0.08 , while average of PMN cells were 8.91 ± 0.37 and 9.70 ± 0.41 as before treatment it and reduce to 4.66 ± 0.44 and 5.20 ± 0.64 in recovered cases in groups-I and II, respectively. Recovered cases were bred by AI or natural service. After follow up, recovery rate, conception rate and pregnancy rates were found as 75.00 per cent and 58.33 per cent, 77.27 per cent and 68.18 per cent, 59.04 per cent and 54.54 per cent from groups-I and II, respectively.

Keywords: Autologous plasma, Cows, Lugol's, Myron tablets, Repeat breeder

India has about 192.49 million cattle population which includes 142.11 million indigenous and 50.42 million crossbreed and exotic cattle (Livestock Census, 2019). The strength of dairy farming lies in maintaining maximum reproductive performance as fertility failure results in significant economic losses. Post-partum period is the most crucial transitory phase for health, production and subsequent fertility of dairy animals. During this period, cattle exposed to high risk of infection to uterus as the anatomical barriers are breached and genitalia remains open for many days (Goff and Horst, 1997). Uterine infection is a major problem in reproductive management. A wide variety of genital tract diseases of female domestic animals are known to produce significant losses and responsible for poor fertility. Bacterial pathogen plays important role between multiple causes of repeat breeding (Dholakia *et al.*, 1987).

The treatment of endometritis with antibiotics has met with different levels of success, unreliable recovery rate, high treatment cost, quality of milk is hampered, development of antimicrobial resistance and decreased phagocytic activity of poly-morphonuclear (PMN) cell. There is an increasing need to consider therapeutic treatments for the uterine infections by using natural

medicine in the uterus as a way to activate the normal defense mechanisms along with Lugol's iodine and biologically active immune-modulator like autologous plasma.

Total 96 breeder cows were examined and out of which 72 animals repeated more than 3 times were selected to study the treatment efficacies but animals having poor body condition status and clinical health were not included. All the animals were maintained on balanced diet by providing sufficient feed, water and fodder.

On the basis of clinical examination of uterine and cervical discharge uterine infection was diagnosed with the help of PH, White Side test and PMN cell count (Sheldon *et al.*, 2009). pH of cervical discharge samples was measured with pH meter (Eco tester pH). The discharges collected from uterus evaluated by White Side Test (WST). In addition, PMN cells were also estimated by Cytobrushs samples having >4 PMNL cells per 100 endometrial cells were diagnosed as positive cases of endometritis (Madoz *et al.*, 2013).

Selected 72 animals were equally divided and treated with lugol's iodine 2 per cent in distilled water (Group-I), autologous plasma @ 30ml i/uterine with herbal ecboic tablets (Myron*) orally @ 10 tabs daily up to next cycle (Group-II) and Group III animals were maintained as control without any treatment.

The antimicrobial property of lugol's iodine and autologous plasma along with the herbal ecboic tablets

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was studied in this study. On the basis of pH and WST and uterine cytology, uterine infection was identified and effect of treatment was assessed based on the recovery rate, conception rate and pregnancy rate. The pH observations in cows were recorded mix type of pH such mildly acidic, normal, moderately alkaline and highly alkaline cases. A highly significant ($p < 0.05$) number of cases were carrying pH from 8.1 to 8.5. Different grades of severity of infection in the uterus was observed by White Side Test viz. 37.5% mild, 45.83% moderate and 16.66% severe. PMN cell count of the endometrium were measured as $>5\%$ in all selected cases. The PMN cell count was in all selected cases ranges between 05-18%, thus diagnosed as repeat breeder cows due to endometritis (Sheldon et al., 2009).

Infected cows and control group showed average pH of 8.12 ± 0.06 and 8.06 ± 0.11 , respectively and WST was positive in both the groups ranging from mild to moderate grade. While $8.91.4 \pm 0.37$ and 9.79 ± 0.51 number of PMN cells were found in treatment group and control group, respectively.

Out of all cases treated with oral herbal ecobolic tablets along with intra uterine Lugol's iodine 18 cows were recovered from uterine infection and showed negative to White side test (75.00%) but cows in control group did not show recovery from infection. The recovered cows also showed cervical mucus pH of 7.22 ± 0.02 as against 7.81 ± 0.12 in non-recovered cows and the non-recovered cows of control group showed pH of 8.16 ± 0.07 . Similarly low count of PMN cells was reflected in recovered cows only (3.61 ± 0.24 Vs 7.83 ± 0.54 in non recovered cows and 10.62 ± 0.47 in control cows).

Table showing average pH and PMN of CVM in repeat breeder cows before and after treatment

Sr. No.	No. of Obs.	Treatment Groups	pH Before Treatment	pH After Treatment	PMN Before Treatment	PMN After Treatment
1.	24	MLC	8.12 ± 0.06^a	7.37 ± 0.06	8.91 ± 0.37	4.66 ± 0.04
2.	24	MAPC	8.13 ± 0.07^a	7.55 ± 0.08	9.70 ± 0.41	5.20 ± 0.64
3.	24	CONC	8.06 ± 0.11^b	8.16 ± 0.07^a	9.79 ± 0.51^b	10.62 ± 0.44^a

Autologous plasma along with Herbal ecobolic tablets has recovered 14 cows (58.33%). All the recovered cows exhibited average pH as 7.21 ± 0.03 and non-recovered cows showed pH of 8.02 ± 0.05 . Further, there was a gradual reduction in PMN cell count in recovered cases (2.78 ± 0.23 Vs non-recovered (8.60 ± 0.47) and control group (10.62 ± 0.44)), respectively. Among the recovered cows 10 cows did not return to estrus with first service non return rate of 71.42 per cent and 68.18% overall non return rate. After 60 days pregnancy was confirmed with overall pregnancy rate of 54.54 % among recovered cows as against 0.00% in control group cows.

Efficacy of autologous plasma can be improved through support of immune-stimulation by herbal ecobolic

All cases were recovered from uterine infection were subjected to artificial insemination or natural services, but non-recovered cases from treatment and control group were not referred for breeding. However, the repeat treatment was attempted in only once during estrus in non-recovered cases and was not attempted *(*Alarsin Pharmaceuticals-containing Hirabol, Lodhar, Dhavdi Flower, Shilajit, Vasaka Ghan, Guggul, Bang Bhasma, Abrak Bhasma, Vasaka Leaves, Rasavanti, Kasis*) to subsequent estrus. The overall recovery rate of this group was in 18 animals and 75.00% efficacy shows against control group cows. Recovered cases were inseminated and the 15 non return rate was 83.33 and 77.27 per cent to first insemination and overall inseminations, respectively. But 11 (59.09 per cent) out of 18 recovered cows were identified as pregnant after 60 days and no cow was pregnant in control group.

Present study rate of recovery with Lugol's iodine therapy is akin to the percentages recorded by Ramsingh et al. (2013) (75.00 %), Palanisamy et al. (2014) (70.80%), Palanisamy et al. (2015) (75.00 %), Puro (2016) (77.77 %), and Thombre (2017) (77.78 %). Whereas, Sood et al., (2012) have recorded lower recovery rate of 54.10 per cent, respectively.

The results obtained due to lugol's iodine might be due to its slight irritant action which would have increased the blood flow to the site of deposition. This elevated blood supply enhances availability of phagocytic cell population to fight against local infection. Additionally, iodine enhances healing of the endometrium by restoration of its activities to produce $PGF2\alpha$ and by its bactericidal effect (Ahmedi and Elshiekh, 2013).

tablets which help in reducing the infection inside the uterus. Addition small amount of autologous plasma into uterine secretions could elevate the opsonising capacity and enhance the phagocytic activity of PMNs (Asbury et al., 1984 and Methai.,1999). The conception rate in autologous plasma treated buffaloes by Kumar et al. (2013a) and Sarkar et al. (2015) was 70.00 per cent and Sarma et al. (2013) reported 50.00 per cent conception rate in endometritis cows.

In conclusion, the study showed that lugol's iodine shows higher recovery rate (75.00%) than autologous plasma (58.33%), however the final pregnancy rate of treated animals nearly similar in both animals (59.09% and 54.54% respectively).

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