

THERAPEUTIC USE OF OIL BORDEAUX MIXTURE IN CLINICAL MASTITIS OF COW

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Treatment of clinical Mastitis is becoming a problem because of the non-susceptibility of bacteria to the commonly used antibiotics. This may depend on natural or acquired resistance resulting from the improper use of antibiotics (Blood and Henderson, 1974). Reports on efficiency of several drugs of antibiotic group and those of sulpha group are available.

Bordeaux mixture acts as an antifungal and antibacterial agent in plants (Nene and Thapliyal, 1979; Punentel, 1981). The present investigation was undertaken to assess the efficacy of Bordeaux mixture in a suitable and non-irritant base in the treatment of clinical mastitis expecting similar effects on rapidly multiplying bacterial population in the udder of cow, as in plants.

At present there is no report on the chemotherapeutic activity of this combination either in human body or in animal body in association with any disease condition.

Materials and Methods

34 cows admitted to Kerala Agricultural University Veterinary Hospital, Vellayani and Government Veterinary Hospital, Thiruvallam, and 14 animals in the Agricultural College Livestock Farm, Vellayani with the history of Mastitis in varying degrees of severity were randomly selected for the study. All the animals were clinically examined and data recorded.

All the 48 cases of clinical Mastitis were divided into 4 groups, viz., per acute, acute, sub acute and chronic based on the severity as described by Blood and Henderson (1974).

Preparation of oil bordeaux mixture

Oil bordeaux mixture was prepared by adopting the similar formulation suggested for bordeaux mixture in an oily base.

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For the preparation of 1000 ml. of oil bordeaux mixture 10 g of copper sulphate (AR) was weighed and dissolved in 20 ml of distilled water kept in a sterile conical flask, same quantity of quick lime was weighed and mixed with 20 ml. of distilled water kept in another sterile conical flask. These two solutions were poured simultaneously into a third container, and stirred thoroughly. That was emulsified in 960 ml. of neem oil by constant stirring by the help of a mechanical stirrer to make up the volume to 1000 ml and sterilised by autoclaving. The prepared oil bordeaux mixture was used for 7 days from the date of preparation.

Four ml. of oil bordeaux mixture was filled in sterile and disposable syringes with long nozzles covered with caps. The same was used for intramammary infusion.

Mode of administration and evaluation

After completely emptying the affected quarter 4ml of oil bordeaux mixture was infused at an interval of 24 h in per acute, acute and sub acute cases and at intervals of 48 h in chronic cases. Treatment was continued till it was cured and in no case exceeded 7 days. All per acute cases were given a supportive therapy with injection B. Complex and antipyretic drugs according to the clinical signs.

Cured animals were identified by the appearance of normal milk, normal udder size and consistency. It was confirmed by conducting Mastitis test using Baifs Mastitis Detecting Reagent.

Those cases that regained normal udder size, shape and consistency after 7 days of treatment but still with abnormalities in milk were considered as partially cured and left untreated for observation. The treatment with Oil Bordeaux mixture was discontinued in those cases not cured even after seven days of treatment.

Results and Discussion

Out of 48 clinical cases of Mastitis studied, 4 (8.3%) were per acute, 16 (33.3%) acute, 19 (39.6%) sub acute and 9 (18.8%) chronic.

The details of treatment trial with oil bordeaux mixture in clinical cases of Mastitis are illustrated in Table—I.

Treatment trial with oil bordeaux mixture produced 100% clinical cure in chronic cases 89.6% in sub acute cases and 62.5% in acute cases. None of the per acute case showed complete clinical cure after 7 days of treatment. All the partially cured cases were left untreated and clinical cure occurred within a period of 7 to 9 days.

The results of the present investigation have shown that oil bordeaux mixture is a useful chemotherapeutic agent in the management

Table I
Therapeutic efficacy of Oil Bordeaux Mixture against clinical Mastitis in cows

Group	No. of cases studied	Dosage	Treat-ment intervals	Treat-ment period	No. of cases recovered	No. of cases partially recovered	No. of cases not responding to treatment
Per acute	4	4 ml.	24 hrly	3-7 days	—	1 (25)	3 (75)
Acute	16	4 ml.	24 "	3-7 days	10 (62.5)	2 (12.5)	4 (25)
Sub acute	19	4 ml.	24 "	3-7 days	17 (89.6)	1 (5.2)	1 (5.2)
Chronic	9	4 ml.	48 "	3-7 days infusions	9 (100)	—	—

(Figures in parenthesis indicate percentage)

of clinical Mastitis in a situation where most of the causative organisms are non-susceptible to the commonly used antibiotics.

The idea of testing oil bordeaux mixture in the treatment of clinical Mastitis came from its proven action as an antifungal and antibacterial agent in plants.

The common explanation of the toxic action of the heavy metals is based on the properties of these ions precipitating or denaturing protein (Nene and Thapliyal, 1979). A similar mode of action on bacterial protein can be expected by the copper ions released from the oil bordeaux mixture infused into the udder.

In the present investigation oil bordeaux mixture was prepared substituting 96% of water content of bordeaux mixture by Neem Oil, a non-irritant base having antiseptic property. Neem oil contains sulphur to the extent of 0.427% and fixed fatty acids (Dey, 1984).

Adding of Neem oil may stabilise the bordeaux mixture. The prepared oil bordeaux mixture was used for 7 days from the date of preparation since no appreciable change in the therapeutic value of the preparation was noticed. Investigations are under way to study the viability of Oil Bordeaux mixture beyond 7 days.

Because of the convenience and efficiency, udder infusion is the prepared method of treatment in Mastitis (Blood and Henderson, 1974). Here the infusion of bordeaux oil alone is sufficient for acute, sub acute and chronic cases. Systemic involvement like fever and anorexia should be controlled. So in such cases apart from intramammary infusion of oil bordeaux mixture, antipyretic drugs with B-Complex injection should be given according to the clinical signs.

Preliminary studies were conducted on 15 cases prior to this trial to obtain a general idea of dosage and number of days of treatment. Increasing of the dosage from 4 ml. and increasing of the treatment period from 7 days were found to be of no use.

Apart from the clinical feature and causative agent involved, 42 (87.5%) out of 48 clinical cases of Mastitis were successfully controlled with oil bordeaux mixture. Out of 42, four cases were partially cured after 7 days of treatment. They became clinically cured when left for a period of 6-9 days after treatment. So those cases regaining normal udder size, shape and consistency after 7 days of treatment but with abnormalities in milk alone should be left untreated for a gradual cure. The abnormalities in milk alone may be due to the presence of inflammatory debris from the duct system.

The residual effect of oil bordeaux mixture in milk after treatment was not studied in this investigation. From the taste and physical properties of milk, it is recommended that milk 72 h. after the last infusion can be used for human consumption as in the case of antibiotic therapy.

On an average an affected quarter suffers a 30% reduction in productivity and an affected cow is estimated to lose 15% of its production (Smith 1968). The observations on the milk production of the recovered animals belonging to the College Dairy Farm after oil bordeaux mixture therapy revealed that it will not exceed the estimation of Smith (1968). Investigations are in progress to assess the extent of reduction in milk yield after recovery.

From the finding of this pilot study oil bordeaux mixture was found to be an effective chemotherapeutic agent against acute, sub acute, and chronic Mastitis.

Summary

Treatment trial with oil bordeaux mixture in 48 clinical cases of Mastitis in bow showed 87.5% clinical cure.

Hence oil bordeaux mixture was identified as a cheap and effective chemotherapeutic agent against acute, sub acute and chronic Mastitis.

സംഗ്രഹം

അക്വിട്ടുവീക്കം ബാധിച്ച 48 പശുക്കളിൽ 'ഓയിൽ ബോർഡോ മിശ്രിതം' എന്ന മരുന്നുകാമ്പിൽ പ്രയോഗിച്ചതിൽ 87.5 ശതമാനത്തിനും രോഗശമനമുണ്ടായതായി കണ്ടു. അതിനാൽ 'ഓയിൽ ബോർഡോ മിശ്രിതം' അക്വിട്ടുവീക്കത്തിനെതിരെ പ്രയോഗിക്കുവാനുള്ള വില കുറഞ്ഞതും ഫലപ്രദവുമായ ഒരു ഔഷധമാണെന്ന് കണ്ടെത്തി.

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