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**Dear Readers,**

*"We are glad to inform you that, the initial proof reading and valuable suggestions on the technical aspects on this issue was kindly provided by Dr. K. R. Krishnan, M.V.Sc., Ph.D., 14-3-31, Amaravati Nathi, M.G. Road, Madurai – 625 014.*

*We are thankful to Dr. Krishnan for his kind help."*

**- Editor**

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## PREFACE



**Dr. Hervé Laberthe**  
**Managing Director**  
Intervet India Pvt. Ltd.

Dear Readers,

It gives me immense pleasure to address you once again.

While presenting another issue of '*The Blue Cross Book*'-17, I take this opportunity to share our happiness of launching two new products i.e., **Ibrivax**<sup>®</sup> and **Nobilis**<sup>®</sup> FAV vaccine for live-stock and poultry respectively.

Intensive vaccination of the parent stock and progeny with **Nobilis**<sup>®</sup> FAV shall prevent outbreak of Angara (Leechi heart) disease. Similarly, vaccination with **Ibrivax**<sup>®</sup> will protect the precious livestock from Infectious Bovine Rhinotrachetitis (IBR) disease. As you are well aware, like any other viral disease there is no specific treatment of IBR disease. The overall sero-prevalence of IBR was recorded as 38% in the country (Suresh *et al.*, 1999). Considering the wide spread manifestation of the IBR disease and the economic losses arising out of it, **Ibrivax**<sup>®</sup> will be a good prophylactic measure to combat the same in the country. I hope, you will like this issue. Your valuable comments, will be highly appreciated.

Please note, we have started '**The News & Abstract**' column with an idea to publish abstracts on scientific publication and news of veterinary interest. If you come across any such abstract or news, please do send it to us.

Best Regards,

A handwritten signature in black ink, consisting of several stylized, overlapping loops and a long horizontal stroke extending to the right.

**Dr. Hervé Laberthe**

**Reference** : Suresh, K.B., Sudharshana, K.J. and Rajsekhar, M. (1959). *Ind. Vet. J.*, **76** : 5-9.



## THE VETERINARY COLLEGE IN INDIA

### NAGPUR VETERINARY COLLEGE

The college was formally inaugurated with great fanfare at the hands of late Shri Yashwantrao Chavan, the then Hon'ble Chief Minister of Bombay state on 1<sup>st</sup> July 1958. The function was held in the convocation hall of Nagpur University. The name of college was suggested by Dr. S. V. Sakhadeo, the then Deputy Director, H.Q. as "Nagpur Veterinary College" on the lines of Bombay Veterinary College and was accepted by the Government.

In the first year of the college, there were only three departments viz. Anatomy, Physiology and Animal Husbandry and one common laboratory and only one class room for thirty nine boys and one girl admitted. There were only eight teachers including the principal. Then this college was shifted to the temporary hutments at Seminary Hills, Nagpur in 1961. The college was functioned in these hutments for next six years.

The ground floor of the college was ready in 1966 and occupied in 1967. The full fledged college building was completed and occupied in 1971. Priority was given to construct hostel which was ready and occupied during summer of 1964. The college auditorium was constructed in the year 1978-79.

The college became a constituent institute of the Maharashtra Agricultural University in

1969 and of the Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola in 1970.

The Post-graduate courses in the subject of Medicine, Pharmacology, Surgery, Physiology, Animal Genetics & Breeding, Animal Nutrition, Anatomy, Bacteriology and Parasitology are being conducted with admission capacity of two students in each subject.

The University has accepted the course curriculum as per VCI pattern and this college is implementing the under-graduate courses as per VCI pattern with effect from 1995-96. The admission capacity for B.V.Sc. & A.H. degree course is seventy one, including 30% reservation of the lady candidates. Teaching, Research and Extension are the sole objectives of the institute.

This college possess Cattle Breeding Farm, Poultry Farm and Goat Breeding Centre, located in the premises of the college for practical training to the students. The college has well equipped modern veterinary polyclinic for the clinical practice of the under-graduate and post-graduate students.

The college has Veterinary Science Museum, Farmers Training Centre and Guidance Centre, attached to the department of Veterinary Extension Education. For effective

participation of students in community development programmes, the NSS activities are being regularly organised.

**a) On going research project:**

**Department of Medicine:**

Indian Council of Agricultural Research (ICAR) adhoc scheme: "Disease surveillance and diagnostic centre for wildlife in central India".

**Department of Bacteriology:**

NATP / ICAR scheme: "Animal health information system through disease monitoring and surveillance".

**b) ICAR revolving funds scheme:**

The above mentioned scheme is being run in the Anatomy department of the college.

The Government of Maharashtra has taken a decision to establish the Veterinary University in the state. As per decision "The Maharashtra Animal & Fishery Sciences Univeristy, Nagpur is established" in the premises of the Nagpur Veterinary College – in the old college building at Seminary Hills, Nagpur with effect from June 2000. The formal inaguration of the university is held on 3<sup>rd</sup> December 2000 at the hands of Hon'ble Governer, Maharashtra State, His Excellency Dr. P. C. Alexander. The appointment of the first Vice-chancellor, Dr. A. T. Sherikar is done by Government of Maharastra.

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## Polythene Engorgement in Cattle – An Emerging Problem

Mujeeb-ur-Rehman Fazili \*

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With the advent and widespread use of plastics by human population (including farming community) large quantities of a variety of plastic material are often scattered in and around the animal habitations and pastures. Being very light in weight, such material is easily disseminated by wind to places previously free from them. This general environmental hazard is now becoming a menace to the ruminants.

**Etiology :** To keep the feeding cost minimum cows, are let loose in the vicinity to graze in the open area. Scarcity of good quality green fodder and easy availability of polythene and plastic material make the ingestion of these more likely, particularly when they happen to be bags used for disposal of edible garbage such as kitchen waste (Kohli *et al.*, 1998). Lack of discrimination in cattle leads to the ingestion of foreign bodies which would be rejected by other species (Radostits *et al.*, 1994 and Jensen & Swift, 1982). Malnutrition and unbalanced dietary habits lead to a variety of nutritional deficiencies which result in pica leading to ingestion of material other than normal food. The dietary deficiency could either be of bulk or in some (Radostits *et al.*, 1994). Such animals are forced to eat the refuse from houses and other objects from the dumping places in an attempt to assuage their craving. The condition is noticed commonly in adult cows (Mehendale *et al.*, 1998 and Kohli *et al.*, 1998), buffaloes (Singh & Sobti 1998) and only sporadically in adult ewes (Eshoue *et al.*, 1989).

**Pathogenesis :** Plastic is inert and harmless material. When swallowed by the animal, because of its smooth surface it enters rumen without choking the esophagus. The accumulation of this material takes place for a considerable period of time. The non-metallic foreign bodies responsible for the disease include polythene carry bags, nylon ropes, plastic pieces, cloth, leather, nylon socks and rags (Eshoue *et al.*, 1989; Kohli *et al.*, 1998 and Singh & Sobti, 1998). The quantity of this material recovered for the rumeno-reticulum of cows varied from 14 kg to 68 kg (Misk *et al.*, 1984 and Mehendale *et al.*, 1998). Eshoue *et al.*, (1989) and Kumar *et al.*, (2000) recovered 2.5 kg to 4.5 kg of non-metallic foreign bodies from the rumino-recticulum of small ruminants. In the rare case, Sarkate (1997) recovered 26 kg of plastic material from the rumen of a cow. Due to the low density they remain suspended without causing any direct harm to the animal. Later, the foreign bodies get entangled together and occupy dorsal and ventral sacs of rumen and also the reticulum. The masses of ingesta in such cases get trapped in the irregular pockets created by plastic bags and sheets, some of which get rolled themselves into cord-like structures and form a sort of frame work that support the suspended ruminal contents.

Sometimes these plastic impregnated contents due to the churning motion of the rumen (Singh & Sobti, 1998) assume the shape of spherical ball like masses and

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occupy the ruminal cavity (Kohli *et al.*, 1998). Due to a large quantity of plastic eaten by the cow, its ruminal capacity gets reduced resulting in malfunctioning of rumen leading to clinical manifestation (Mehendale *et al.*, 1998). Higher than normal intra-ruminal pressure also depresses hunger so the animal tends to deteriorate in general physical condition (Oehme & Prior, 1976).

Occasionally, the balls obstruct the reticulo-omasal orifice of the affected animals and produce clinical signs resembling those of vagal indigestion (Radostits *et al.*, 1994 and Berge & Westhues, 1977).

**Clinical Manifestations :** Prominent complaints of the owners include fall in the daily milk yield to 4 to 5 litres from about 13-15 litres and drastic reduction in the feed/fodder intake of the cow (Mehendale *et al.*, 1998 and Kohli *et al.*, 1998). Such animals show progressive loss of condition and weight. They are listless and dehydrated. They show chronic to moderate ruminal tympany which is unresponsive to repeated treatment (Kohli *et al.*, 1998). Respiration, pulse and temperature are usually within normal range. However, Eshoue *et al.*, (1989) reported rapid and shallow respiration and simple tachycardia in ewes. Palpation of the left flank reveals doughy rumen feel with slight increase (Mehendale *et al.*, 1998) or decrease (Kohli *et al.*, 1998) in ruminal movements. On rectal palpation, rumen was often enlarged and its consistency was variable from hard to doughy to mildly tympanic. There is decrease in faecal output and its consistency normal or semi-solid. Visible mucous membrane is usually pale. In few cases, the ketone smell of breath was also noticed (Oehme & Prior, 1976).

**Diagnosis :** The symptoms of polythene engorgement resemble those of traumatic reticulo-peritonitis (TRP), diaphragmatic

hernia (DH), enlarged mediastinal lymph node, liver abscess and rumen papillomatosis.

A cow suffering from TRP is usually greedy, eats vigorously but suddenly stops and even grunts. Same process is repeated after an interval. Abduction of elbows is also noticed. Pain tests like pinching of the back and pole test and other tests like leukocytosis with left shift, neutrophilia. Use of metal detector also helps to differentiate engorgement from TRP. Plain and positive contrast radiography helps to diagnose metallic foreign bodies in TRP, location of reticulum beyond diaphragm in DH, decreased oesophageal lumen in cases with enlarged lymph node and space occupying lesions in papillomatosis. In cases with enlarged mediastinal lymph node, resistance is encountered during the passage of stomach tube. In cows, suffering from DH area of dullness exceeds that of heart during percussion and splashing sounds are heard cranial to the normal reticular area. Therapeutic - cum - diagnostic laparotomy is the most valuable test to diagnose and simultaneously treat the condition.

**Treatment :** The cases of polythene engorgement are treated by surgical removal of entrapped foreign bodies. The operation is performed in standing position through left flank under para-vertebral block analgesia of T<sub>13</sub>, L<sub>1</sub> and L<sub>2</sub> or local infiltration using 2% lignocaine hydrochloride. Routine internal palpation before opening the rumen helps to diagnose the various other conditions. Ruminotomy is performed following Goetzes method (Berge & Westhues, 1977) or utilizing Weingart's ruminotomy set. In the most of the cases the rumen contents are frothy. All foreign bodies are removed carefully preventing the abdominal pilferage. The entangled material is to be cut into pieces and /or the incision may have to be extended even upto 18 inches (Mehendale *et al.*, 1998)



& Kohli *et al.*, 1998) concentrate mixture and wheat bran mixed with chaffed jawar straw soaked in water with 50-100 gm of remintoric powder is filled into rumen through the incision, upto 20 kg (Mehendale *et al.*, 1998).

**Prevention :** Plastic / polythene, which is already regarded as general environmental hazard, is becoming a menace to the ruminants through out the developing world. The incidence can drastically be reduced by following the guidelines given below :

- a) The governments must implement law preventing the use of polythene carry bags.
- b) The public should dispose off the kitchen waste in a proper way.
- c) The cattle owners should follow intensive balanced feeding of their animals.
- d) The animals should not be let loose in areas used for dumping the harmful industrial wastes.

As such it is proper time to commence farmer education cum public awareness campaign against the "plastic menace".

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**Keywords :**

**Vagel :** Pertaining to Vagus Nerve, **Tachy Cardia :** Abnormally rapid heart rate; **Ruminal Tympany :** Distension of rumen with gas; **Doghy :** Thick soft paste like

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*"Lack of money is no obstacle.  
Lack of an idea is an obstacle"*

*- Ken Hakuta*

## Classical Swine Fever Virus – Its Survival and Inactivation

**S. Nandi**

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### **Introduction :**

Classical Swine Fever (CSF) is a highly contagious and often fatal disease of swine. The disease is of world wide importance and is endemic in many countries in Eastern Europe, South East Asia and Southern and Central America. Although many Western European countries are free of CSF, countries with pig dense areas like Germany, The Netherlands, Belgium and Spain are susceptible to a high risk of CSF outbreaks. In India, as well, there are lot of disease outbreaks reported throughout the year inspite of the presence of a potent and efficacious vaccine. The reason might be the reduced potency of vaccines due to improper storage, improper applications and inability to immunize all the susceptible domestic and wild pigs. The lack of awareness of the disease among the public cannot be neglected. Finally, carrier state of wild boars to act as transmitters of virus to susceptible domestic pigs remains as a daunting task to be solved.

Recent outbreaks in intensive livestock areas around the world have highlighted the need for comprehensive information on the survival time of the virus under different conditions which in turn leads to formulate satisfactory disease control programmes and enormous economic losses can be avoided if implemented promptly and properly.

### **Virus :**

The causative agent, Classical Swine Fever (CSF) is a pesti-virus of the family Flaviviridae. It is an enveloped virion incorporating glycosylated membrane proteins and an icosahedral nucleocapsid. It contains a single stranded positive sense RNA

codes for four structural and seven non-structural proteins.

### **Mode of Transmission :**

CSF virus is moderately fragile like many enveloped virus but may survive prolonged period in a favourable environment which is cool, moist as in meat. Pigs may show acute, chronic or congenial infections with CSF virus. In each case, the infected pig is viraemic and will shed virus for a variable but considerable period including the prodromal phase. The major route of transmission of CSF virus is directly from pig to pig. This contact may be between live pigs or from carcasses or pig products to susceptible live animals through the feeding of uncooked swill or house hold scraps. The virus may also be spread among the pigs to high densities through aerosol.

### **Survival in Meat :**

Virus can be easily recovered from pigs died or killed during acute phase of swine fever infection including the prodromal period. It is important as widespread practice of feeding waste food (swill) from the human food chain back to pigs may If swill were result in CSF. to contain uncooked infected pig meat or meat products, it would initiate the infection particularly in swine fever free areas.

The viability of virus in pork and pork products varies and depends on the treatments to which they are subjected. In chilled fresh pork, the virus can survive up to 85 days and more than 4 years respectively. Swine fever virus in proteinaceous environment of meat tissue is not inactivated by salt cures and

smoking. Virus survival times of between 17 and 188 days have been reported for different forms of curing or smoking. The critical factor is probably the length of time and the temperature at which the product is stored before being released to the market.

However, CSF virus is readily killed by Pasteurization process or cooking. Virus becomes non-infective after treating the virus contaminated meat at 65° C for 30 minutes or 71° C for 1 minute. Defibrinated blood containing 10<sup>5</sup> TCID<sub>50</sub> (Tissue Culture Inactive Dose 50% / ml), virus can be inactivated by 66° C for 45 minutes or 69° C for 30 minutes.

Virus contaminated meat is a major concern where such products came in contact with live pigs usually through feeding of swill. The disease can be prevented by banning swill feeding or importation of pork or pork products from disease prone areas.

### **Survival in the Environment :**

The viability of virus in the environment depends on many physical and chemical factors viz. temperature, humidity, pH, presence of organic matter and exposure to various chemicals. Virus remain infective in the contaminated straw or hay for 7 days UV rays rapidly inactivates the virus.

Infected pigs excrete virus from the respiratory, urinary and alimentary tracts and contaminate the immediate surroundings. Virus may be transmitted from farm to farm within 6 km radius especially in areas with high pig populations. The virus may be inactivated more rapidly in liquid phase of slurry than in the solid phase where infectivity being lost in about 15 days.

### **Survival *In-vitro* :**

CSF virus is generally stable at slightly acidic to slightly alkaline (pH 5-10) but is rapidly inactivated at pH 3 or below and above pH 10. The optimum pH for virus survival in defibrinated blood is 5..2.

Virus is inactivated in < 1 minute at 100° C, 1 minute at 90° C, 2 minutes at 80° C and 5 minutes at 70° C. Some strains are relatively resistant at 56° C for 30 minutes while others are inactivated by similar treatment.

Virus is reasonably stable at lower temperatures depending on the suspending medium. The half-life of virus is dependent on both temperature and pH, with the effect of pH being much more marked at 4° C than at 21° C. The drop in titre after 2 days at 37° C is 4 logs and after 3 days at 37° C is > 5 logs. Deep freezing or freeze drying can preserve the infectivity of virus for months or years with minimal loss of titre, especially if cryoprotectant additives are to be used.

### **Chemical Inactivation and Disinfection :**

Like other enveloped viruses, CSF virus is inactivated by organic solvents, such as ether, Chloroform (CHCl<sub>3</sub>), detergents such as NP40, deoxycholate, or saponin. Besides, CSF virus is sensitive to a wide range of chemicals, including chlorine based disinfectants, phenolics, quaternary ammonium compounds and aldehydes (formaldehyde, glutaraldehyde).

### **Conclusion:**

CSF is probably the most important infectious viral disease of domestic pigs with devastating economic consequences. It can cripple the general economy of a country where the disease is endemic. In India, there are lot of outbreaks reported throughout the

year across the country. Although the potent and efficacious vaccine is available in the market but the awareness about the disease in the public is not enough to bring the susceptible animals under immunization programme. Further, the disease picture has been complicated due to the involvement of wild pigs which act as carrier animals to transmit the disease to susceptible animals. The knowledge about survival of the virus in

different environment would definitely help in the better and efficient management of the disease and to check the transmission of the virus. Again, the knowledge of inactivation and disinfection of the virus by chemicals, detergents and other agents and judicious use of potent and safe vaccine would enable us to design a control programme which in turn succeeds in the arrest of the disease outbreak and substantial economic losses.

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## Treatment of Ectoparasitic Infestation in Dogs with Deltamethrin

D. K. Maske, M. D. Sakhare and A. K. Datta\*

Department of Parasitology, Nagpur Veterinary College, Nagpur-440006, MS

### Introduction :

Arthropods infestation like ticks, fleas and lice etc. are continuous threat to dogs, thereby causing serious health hazards and losses in work efficiency of these pet animals. Amongst ectoparasiticides, deltamethrin tablet is highly potent broad spectrum ectoparasiticide agent and is claimed to be better and safe compound in controlling the ectoparasites of cattle (Maske *et al.*, 2000). It was therefore, decided to assess the efficacy of Deltamethrin tablets in dogs, naturally infested with ectoparasites under field conditions.

### Materials and Methods :

The trial was conducted on dogs, brought to private pet animals clinics at Nagpur. A total of twenty dogs of either sex, ranging from 8 months to 4 years of age, naturally infested with ectoparasites were selected for this study. The dogs were of German Shephard, Doberman, Spitz and Mongrel breeds. Ticks, fleas and lice specimens from individual dog were collected, processed and identified (Sen & Fletcher, 1962) as *Rhipicephalus* sp. (ticks), *Ctenocephalides* sp. (flea) and *Trichodectus* sp. (louse). All dogs were harboured with mixed ectoparasitic infestation. Dogs were divided into two groups, each of ten dogs of irrespective of breeds in each group(I & II). Group I, consisted of ten infested dogs, was treated externally with 50 ppm concentration of deltamethrin tablet. Each tablet contains 0.5g of deltamethrin and was dissolved in 10 litres

of tap water. Group II dogs were kept untreated as control. The efficacy of treatment was judged from the reduction in the ectoparasite counts. The period of protection was noted from reinfestation. Ectoparasitic counts per unit area were made in both the groups before treatment and subsequently at 30 minutes, 1 hour, 3 hours and 6 hours intervals to find out the reduction of ectoparasites. Later on, ectoparasite count was made at 7 days intervals to note the reinfestation.

### Results and Discussion :

Observation indicated that Group I dogs with a single application of deltamethrin at 50 ppm concentration was significantly cent percent effective in killing of all ectoparasites at varying time of intervals (Table), while control (Group II) dogs were found to harbour the ectoparasites.

It was interesting to note, that immediately after application of the drug, ectoparasites started wriggling and found that there was about 60 percent reduction of immature ticks, fleas and lice in 3 hours, 30 minutes and 15 minutes, respectively, while cent percent killing of all ticks, fleas and lice was observed by 6 hours, 1 hour and 30 minutes, respectively after treatment. Treated ticks of all stages, fleas and lice failed to react to entomological pin. Treated dogs were found picking up of reinfestation after 21 days of single treatment. Maske *et al.*, (2000) reported cent percent killings of cattle ticks

\* Intervet India Pvt. Ltd., 412, Thakur Mansion Lane, Somajiguda, Hyderabad – 500 082.

**Table : Efficacy of Deltamethrin Against Ectoparasites in Naturally Infested Dogs.**

S.No.	Group	No. of dogs used	No. of dogs cured	Percentage of efficacy against ectoparasites		
				Ticks	Fleas	Lice
01.	I (Treated)	10	10	100 (6 hours)	100 (1 hour)	100 (30 minutes)
02.	II (Untreated)	10	NIL	NIL	NIL	NIL

Note : Figures in parenthesis, indicate time of intervals

and lice in 24 and 12 hours, respectively. The present study revealed that Deltamethrin is highly effective against ticks, fleas and lice parasites of dog, showing cent percent efficacy in 6 hours, 1 hour and 30 minutes, respectively. In the light of these observations, a single spray of Deltamethrin tablet freshly dissolved in water can be recommended for controlling of ticks, fleas and lice of dogs in the field with the advantages like quick ectoparasitic action, safe in handling, considerable residual effects and no side effects on the dogs as well as handler.

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*“ Need and struggle are what  
excite and inspire us”*

**- Charles H. Brower**

*“What the mind can conceive and believe,  
the mind can achieve”*

**- W. Clement Stone**

## Effect of Oxytocin on Dry Period in Surti Buffaloes

B.K. Pugashetti, M.B. Duby and M.C. Shivakumar

Main Research Station (MRS), Dairy Unit, UAS, Dharwad-5

The dry period is an important phase of lactation that exerts pronounced influence both on the production and reproduction of dairy animals. As information on the effect of Oxytocin on dry period in Surti buffaloes is not readily available, the present study was undertaken.

### Materials and Methods :

A total of eighty four Surti buffaloes in dry period at UAS dairy farm, Dharwad were selected for this study. Of these eighty four animals, six were normal milkers which acted as control and seventy eight were hard milkers and received 5 IU of Oxytocin intra-muscularly daily till drying. Control and treated buffaloes were maintained under same managemental conditions and analysed as per methods described by Snedecor & Cochran [1980].

### Discussion :

The average dry period in control buffaloes was  $94.00 \pm 9.59$  and  $116.92 \pm 7.83$  days in

Oxytocin treated animals. Statistically, there was no significant difference between control and treated animals. However, Dave & Parekh [1976] had administered 2.5 IU of Oxytocin intra-muscularly in twenty five hard milking buffaloes and recorded a longer dry period of  $173 \pm 18.8$  days compared to  $151.0 \pm 12.05$  day in control animals and revealed that Oxytocin treated hard milking buffaloes have longer dry period.

This study suggests that giving Oxytocin exogenously will not increase the length of dry period and has no pronounced influence both on the productive and reproductive performance of hard milking Surti buffaloes.

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*“ When I was a child, my mother said to me - ‘If you become a soldier you’ll be a general. If you become a monk you’ll end up as the pope.’ Instead, I become a painter and wound up as Picasso.”*

*- Pablo Picasso*

## Efficacy of Berenil® vet 7% RTU (Ready to Use) Injectable Solution Against Haemoprotozoan Infection in Buffaloes

V.S. Narsapur and A.K. Datta\*

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### Introduction :

Haemoprotozoan infections are quite common in buffaloes and the symptoms constitute, fever and anaemia with either jaundice, haemoglobinuria or nervous signs depending on the species of organism involved. Diminazene aceturate is widely used as chemotherapeutic drug against cattle haemoprotozoan infection in Africa (Whiteside (1962), Faircough (1963), Williamson (1970), Pandey & Mishra (1978), Baur (1963) and Verma *et al.* (1973). Its usefulness and tolerance in the target species are fairly well documented (Singh *et al.*, 1980 and Farewell *et al.*, 1982). In India, Diminezene Aceturate has been the drug of choice and is available in powder formulation **Berenil® vet** from Intervet which is reconstituted in sterile distilled water before administering by deep intra-muscular route. However, **Berenil® vet 7% RTU (Ready to Use)** is now made available in 7% Ready to Use (RTU) injectable solution, recently launched by Intervet India Pvt. Ltd. To ascertain its efficacy and safety in the form of Ready to Use (RTU) injectable formulation in the field, the present study was under taken.

### Materials and Methods :

Fifteen cases of pyrexia in buffaloes were studied as and when the cases were available. Blood examination of each animal was carried out for haemoglobin, total WBC count, differential count and also for blood parasites.

Five animals were selected for this study which were either positive for blood parasites in microscopic examination or revealed changes in blood picture, suggestive of haemoprotozoan infection in blood (low Hb values with mild leucocytosis and near normal differential WBC counts) (Table). These five animals were given **Berenil® vet 7% RTU (Ready to Use)** injectable solution at the dose of 20 ml / adult animal by deep intra-muscular route as single does. The animals were observed for one week during which they were given Vitamin B complex + Liver extract injection at the dose rate of 4 ml per animal twice as supportive therapy. Blood examination of the treated animals was repeated, one week after treatment.

### Observations :

Out of five animals showing pyrexia (104° to 105°F), one was found positive for *Trypanosoma evansi* in microscopic examination, while four others were microscopically negative but broadly diagnosed as cases of haemoprotozoan infection in view of anaemia, moderate leucocytosis and near normal differential WBC (White Blood Cell) count, revealed in the blood examination. Body temperature returned to normal within 24 hours in all the treated cases and the animals which were off feed started gradually taking feed and grass. Blood examination, one week after treatment,

\* Intervet India Pvt. Ltd., 412, Thakur Mansion Lane, Somajiguda, Hyderabad – 500 082



revealed that all the animals were negative for blood parasites and there was definite improvement in the status of anaemia. No side effects were noticed in any of the five animals treated with **Berenil®vet 7% RTU (Ready to Use)** injectable solution.

#### Conclusion :

This preliminary observation indicates that **Berenil® vet 7% RTU (Ready to Use)** injectable solution is very effective against haemoprotozoan infection in buffaloes as a single dose rate of 20ml per adult (i.e., at the rate 3.5mg/kg b.w). The drug used at this

dose, is not having any side effects on the animals. A detail observation involving more number of cases of different types of haemoprotozoan species infections is indicated to generate specific data.

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\* A half dose administration in the second week is recommended for all breeders in very endemic regions.

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 **Intervet**

Table : Details of Blood Reports Pre- and Post-treatment of Five Buffaloes, with Beremil® Vet 7% RTU (Ready to Use) Injectable Solution.

Cases	Body Temp. (°F)	Hb (g%)	Total WBC (per/cmm)	Poly-morpho-neutrophils (%)	Eosinophils (%)	Basophils (%)	Lymphocytes (%)	Monocytes (%)	Parasite if any in blood smear
<b>Buffaloe No. 1</b> Pre-treatment	105	7.4	7000	32	2	Nil	64	2	<i>Trypanosoma evansi</i>
Post-treatment	99.2	9.0	6000	32	3	Nil	64	1	Negative
<b>Buffaloe No. 2</b> Pre-treatment	104.4	7.2	7500	30	3	1	65	1	No Parasite detected
Post-treatment	99	9	6000	35	Nil	Nil	65	Nil	Negative
<b>Buffaloe No. 3</b> Pre-treatment	104.8	6.8	7200	35	4	Nil	60	1	No Parasite detected
Post-treatment	99.6	9.2	5600	32	3	Nil	63	2	Negative
<b>Buffaloe No. 4</b> Pre-treatment	105	7.0	7800	28	3	Nil	67	2	No Parasite detected
Post-treatment	100	9.0	6600	41	Nil	Nil	58	1	Negative
<b>Buffaloe No. 5</b> Pre-treatment	104	8.0	8000	39	5	Nil	54	Nil	No Parasite detected
Post-treatment	100	9.0	6800	42	Nil	Nil	58	2	Negative

## Synchronisation of Heat in Anestrous Bovines

P.K. Srivastava and P. Agarwal

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### Introduction :

Anestrous and mastitis infection are the two challenging problems in Indian livestock production. Both cases are difficult to treat in reference to their multiple etiology. Hence, they are more suitable to be designated as syndromes.

The etiology of anestrous may be broadly classified into three categories – hormonal, pathological and nutritional causes. While nutritional management remains merely a qualitative factor, hormonal and pathological management has been the most challenging despite the availability of most of the hormones in the market for the treatment of corrective measures. The biggest limitation is the economical feasibility of the therapy.

In the present study, a comparatively economical method is suggested, based on the trial conducted in the bovines.

### Material and Methods :

A drug trial was conducted at Ghazipur Dairy Farm, New Delhi. Twenty five number of cross breed cattle were selected for this experiment. The experiment was conducted from July to August 2000. Duraprogen (17 alpha hydroxyprogesterone caproate), and **Iliren**<sup>®</sup> (Tiaprost Trometamol from Intervet) were used for this experiment.

### Protocol :

Twenty five cases of anestrous cows were randomly selected, based on their anamnesis. For synchronization of heat, the following treatment was given to these animals. On the day 0, 500mg of Duraprogen was injected. On the day 7, another dose of Duraprogen was given to all these animals. On the day 10, 4 ml of **Iliren**<sup>®</sup> were injected through vaginal sub-mucosal route.

### Results and Discussion :

All the twenty five animals were naturally served with a healthy bull for optimizing the chances of insemination. After 24 hours, 10 ml of Gentamicin Sulphate was infused by intra-uterine route. Twenty three animals responded well to the therapy (92%) and subsequently came to heat. Of these, eighteen animals conceived (72% conception rate). The normal conception rate is generally, on an average, 40% in Ghazipur Dairy Farm.

Withdrawal of Progesterone and PGF<sub>2</sub> alfa (**Iliren**<sup>®</sup>) helped in the toning of the uterus. Gentamicin removed the latent infection and prevented early embryonic death.

*“Man is a gregarious animal, and much more so in his mind than in his body. He may like to go alone for a walk, but he hates to stand alone in his opinions”*

*- Santayana*

# Prevalence of Ectoparasites and Efficacy of butox<sup>®</sup> in Sheep and Goats of Gaddies and Bakerwals Migrated from Highland Pastures in and around Jammu

Mohd. Rashid

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## Introduction :

Ectoparasite infestation in animal and human residential places, clothings beddings, etc. particularly in hilly areas of our state is a serious problem. The ectoparasites (Lice, ticks, mites and fleas) not only inflict direct damages to man and animals by causing severe irritation, itching, dermatitis and blood loss, (Srivastava & Sinha, 2000) are also responsible for transmission of zoonotic and non-zoonotic protozoan, bacterial and viral diseases of man and animals (Chakraborti, 1997).

A study was conducted to find out the prevalence of ectoparasites and the efficacy of butox<sup>®</sup> in sheep and goats which were infested with lice, fleas, ticks and mites. It was found that proper application, with due care, successfully removed the lice, fleas, ticks (100%) without any untoward effect as reported earlier (Bhatia, 1974, Leahy, 1985, Kumar & Suryanarayana, 1995 and Ghosh & Nanda, 1997).

## MATERIALS AND METHODS :

A total of five hundred animals (three hundred sheep and two hundred goats) belonging to Gaddies and Bakerwals migrated from Himalayan highland pastures were examined and two hundred animals were found naturally infested with lice, fleas, ticks and mites. butox<sup>®</sup> (Intervet India Pvt. Ltd.) was used after proper dilution by mixing 2 ml per litre of water (25 ppm) as a dip and sometime with the help of a sprayer throughout the body

and special care was taken for spraying in the hiding places such as axillary, inguinal regions, behind the ears and perineal regions. The same treatment was repeated after 8 days of the first treatment. The criteria for the evaluation of efficacy of drug included the visual examination for reduction in the number of ectoparasites on the body coat of animals and reduction in the symptoms of itching, irritation and general improvement of health of animals.

## RESULTS AND DISCUSSION :

Animals were infested with ectoparasites out of which 16% were having lice, 12% fleas, 7% ticks and 5% mites. All sheep and goats affected with lice, fleas and ticks were completely recovered clinically and parasitologically within two weeks of the first application of butox<sup>®</sup> except, in mange and dermatitis(mites) cases, 80% recovery was achieved (Table), the reason behind, may be some other etiological agent (Bacterial, fungi etc.) associated with the disease conditions. It has also been observed that reinfestation did not take place for a considerable time. This might be attributed due to longer sustaining effect of butox<sup>®</sup> application which was also reported by Bullman *et al.*, (1981). Stubbs *et al.*, (1982) and Kinhavdekar & Parai (1995). The longer sustaining effect reduces the frequency of treatments in a control campaign which is desirable and is also a fact in delaying the process of resistance as recommended by Bullman *et al.*, (1981).

**Table : Showing Prevalence of Ectoparasites in Sheep and Goats of Gaddies and Bakerwals (n=500), Migrated from High Land Pastures in and Around Jammu and Efficacy of butox®.**

S.No.	Ectoparasites recorded	Average (Percentage) infestation / animal	Efficacy of butox®
1.	Lice	16%	100%
2.	Fleas	12%	100%
3.	Ticks	7%	100%
4.	Mites	5%	80%

n : Total number of animals investigated

#### Acknowledgement :

The author is grateful to Dr. Swapan Kumar Sur, Veterinary Surgeon, Block Hospital, Nalikul, Calcutta for guidance and to carryout such studies.

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*“The difference between what we do and what we are capable of doing would solve most of the world’s problems.”*

**- Mahatma Gandhi**

## Efficacy of butox<sup>®</sup> and Different Herbal Drugs Against Natural Infestations of Ectoparasites in Cattle

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### Introduction :

Arthropod infestation is a universal problem of economic importance causing serious health hazards and production losses in exotic as well as indigenous cattle. Many ectoparasiticides have been widely used against ectoparasites, but their diminishing efficacy due to resistance problem (Nolan, 1987) have led to search for an effective alternative. The present investigation deals with the evaluation of butox<sup>®</sup>-EC (deltamethrin), AV/EPP/16-EC (herbal), 'Pestoban'-EC (herbal) and 'Nimbitor'-EC (neem oil) ectoparasiticides against natural infestations of ectoparasites of cattle.

### Materials and Methods :

Cattle, ranging from six months to eleven years of age, belonging to cattle breeding farm of Nagpur Veterinary college, Nagpur, showing natural infestations with ticks, lice and fleas were selected. On examination, these arthropods were identified as *Hyalomma analoticum*, *Linognathus vituli* and *Hippobosca maculata*, respectively. The identity of the parasites were confirmed from morphological features (Soulsby, 1982). All animals harboured mixed ectoparasitic infestations. The selected animals were divided randomly into Infested treated group-I and in-

festated untreated group-II each with 40 animals. Group-I, consisted of 40 cattle, was subdivided into four subgroups (A, B, C & D), each with 10 animals. These subgroups were used for ectoparasiticide trials with drugs viz., 'butox<sup>®</sup>' (Intervet India Pvt. Ltd.), AV/EPP/16, Pestoban and Nimbitor, respectively. Group-II with 10 animals in each drug treatment was kept as infested untreated control. The efficacy of drug was assessed on the basis of observation on mortality/reduction in the counts of different ectoparasites. The ectoparasite counts were done in all groups before and after treatment at daily intervals to confirm the elimination of different ectoparasitic stage.

### Results and Discussion :

The results on efficacy of the drugs are presented in the Table. butox<sup>®</sup> was applied in 0.02% concentration as spray on naturally infested cattle. The percentage of efficacy observed, was cent percent for ticks, lice and fleas in 24 – 36 hours, 5 – 10 and 10 – 20 minutes, respectively.

AV/EPP/16 was applied in 1:4 dilution as spray on infested cattle. The percentage of efficacy showed cent percent in 36-48 hours, 10 – 20 and 20 – 30 minutes against ticks, lice and fleas, respectively.

*"We must always change, renew, rejuvenate ourselves; otherwise we harden"*

*- Goethe*

**Table : Showing Efficacy of Drugs Against Arthropod Infestations of Cattle**

S. No.	Products	Average number of arthropods pre-treatment			Average number of arthropods Post-treatment of time interval					
		Ticks *	Lice **	Fleas ***	Ticks		Lice		Fleas	
					24-36 Hours	36-48 Hours	5-10 Minutes	10-20 Minutes	10-20 Minutes	20-30 Minutes
01.	<b>butox</b> <sup>®</sup> (0.02%)	11.4	21.2	10.0	00.0	-	0.0	-	00.0	-
02.	AV/EPP/16 (1:4 dilution)	12.0	20.0	11.0	7.0	00.0	9.0	00.0	5.5	00.0
03.	Pestoban	12.5	18.2	9.2	8.0	4.0	10.0	7.2	5.2	1.2
04.	Nimbitor (1:4 dilution)	10.4	20.0	8.2	10.2 (2)	9.6 (7)	10.3 (48)	0.0 (100)	5.2 (36)	2.2 (73)

\* Ticks at inguinal region

\*\* Lice per 64 sq cm area of skin at neck

\*\*\* Fleas at inguinal region

Figures in parenthesis denote percentage of efficacy

The use of 1:10 dilution of Pestoban spray resulted efficacy as 68%, 60% and 86% in 36 – 48 hours, 10 – 20 minutes and 20 – 30 minutes against ticks, lice and fleas, respectively. While 1:4 dilution of Nimbitor spray, the efficacy was observed for ticks, lice and flies was 7%, 100% and 73% in 36 – 48 hours, 10 – 20 minutes and 20 – 30 minutes, respectively. Statistically, there was significant difference between all treatment periods as far as ticks, lice and fleas counts are concerned.

The efficacy of 0.02% '**butox**<sup>®</sup>' as spray, was found cent percent in 24-36 hours, 5-10 and 10-20 minutes for ticks, lice and fleas, respectively. These findings corroborate with the observations of Srivastava *et al.*, (1993). The observations regarding application of 'AV/EPP/16' are in close proximity with

those of Bhilegaonkar & Maske (1997). While the findings found in respect of efficacy of 'Pestoban' are similar with Maske *et al.*, (1995). The efficacy of drug 'Nimbitor' noted was 7%, 100% and 73% in 36-48 hour, 10-20 animals and 20-30 minutes for ticks, lice and fleas respectively.

In India, many drugs have been tried and reported for control of either single or more than one type of arthropod infestations of animals. Bagherwal *et al.*, (1994) used deltermethrin Sangwan *et al.*, (1998) tried deltamethrin, diazinon and amitraz. In the chemotherapeutic investigations a drug '**butox**<sup>®</sup>' was found cent percent effective against ectoparasites. The ectoparasiticidal action of **butox**<sup>®</sup> was decidedly better, as compared to drugs Viz. 'AV/EPP/16', 'Pestoban' and 'Nimbitor'.

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## Case Report : Cerebral Hernia in a Newly Born Calf

M. T. Nassef

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Cerebral Hernia is an opening in the frontal and parietal bones associated with severe CNS (Central Nervous System) defect, prolonged gestation and dystocia in cattle.

An one day old calf was admitted to the clinic with the presence of skin sac like a long cap over the head (Fig. 1). Examination of the skull referred the presence of defect in the bone of the skull. The calf was unable to stand, but had the ability to drink milk.

Operation was performed under local infiltration anesthesia and the skin cap was removed (Fig. 2). The meninges were sutured

with No. 2/0 Dexon, and skin coaptated with mattress suture using No.2 silk (Fig. 3).

Ten days later, the calf was brought back to the clinic with good healing of the wound. The calf unable to stand, but he was drinking a large amount of milk with moderate body growth.

The skin stitches were removed on the 10th day (Fig. 4). Follow up of the case for 2 months appeared that the calf has grown up but not to the normal extent. The cow owner was advised accordingly for further corrective measure.



Fig. 1 : Showing Skin Sac Like Cap Over the Head



Fig. 2 : Showing Removal of Skin Cap



Fig. 3 : Showing Skin Coaptated With Mattress Suture



Fig. 4 : Showing Removal of Stitches on 10<sup>th</sup> day

## Book Review :

### “Piggery India Year Book 2000”

By Dr. Chandra Shekhar Sahukar

Assistant Commissioner, Govt. of India Ministry of Agriculture,  
Department of Animal Husbandry & Dairying,  
New Delhi

Published by Scientific Publishers & Distributors,  
New Delhi

Price : Rs. 2000/-

Pig production is going to be an important component of meat industry in India. Pigs being prolific breeders and best converters of feed in to meat, are ideally suited for food animals. The profits to the farmers from piggery is much higher than from any other agricultural activity.

The extension of information on scientific piggery to the farmers is not adequate and many piggeries in the country are not run on the scientific lines.

Dr. C.S. Sahukar has attempted to substantiate the information gap on the above subject by authoring the book, entitled “Piggery India Year Book 2000”. He is successful to a great extent.

The book is of 600 pages, divided in to 51 chapters and has been dealt with every aspect of piggery development from Housing, Management, Nutrition Diseases, processing production and quality control of pork. Chapters on project reports, finance and planning will be a good guide to new entrepreneur. A directory of various institutes which are of help to farmers is also included. Apart from these, writings on the place of pigs in history, art and mythology and a chapter on wild boars, the ancestor of present breeds, makes one to look to this creature in a different angle.

In India, with the present cost of feed ingredients, compound feed for pigs is not affordable to farmers. More details regarding alternate feeds and the methods of using those was expected in this book. Similarly diseases and the control methods should have been dealt in greater details. These are just by the way of suggestions, when the book will be the taken up for the next revision.

The book will be very valuable to every one who is connected with piggery, farmers, supervisors, veterinary consultants, meat processing and marketing firms, and even bank and government officials, since it covers every aspect of piggery one can think of it.

The book is well written with a good numbers of illustrations, facts and figures. The printing and getup are very good and spelling mistakes are very few.

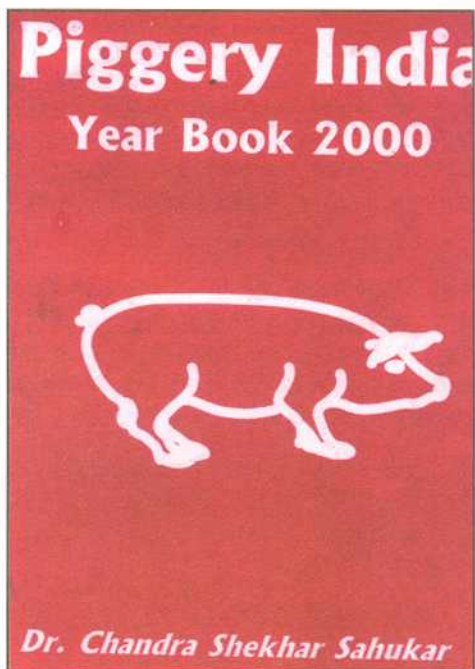
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## Case Report : A Rare Case of Dystocia Due to Foetal Ascites in a Buffalo

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A buffalo in its third lactation, having completed its gestation period and failed to deliver, was brought to the University clinic. The water bag had already ruptured and manual traction was done by the field veterinarians without success. The quantity of foetal fluid expelled was more than what is observed normally. The feed and water intake were unaffected. The animal was in good condition and was still straining.



Fig.1 Ascitic Calf Delivered by Traction After Releasing the Fluids – Note the Incision Site.

Gynaecological examination revealed the presence of both the fore limbs and head of a fully grown foetus in genital passage. The cervix was sufficiently dilated to affect the delivery of a normal calf. On further examination, the thoracic and abdominal area of the foetus was enormously distended due to accumulation of excessive quantity of liquid in the foetal body. On the basis of history and gynaecological examination, it was diagnosed to be a case of foetal ascites. The handling of dystocia, consisted mainly of releasing the fluid from the foetal body. A scalpel guarded in the hand was taken inside the passage, and a small incision was made

on the latero-ventral aspects of the foetus, where distention was felt. The incision was extended by inserting a long handled eye hook into the incised area (Fig. 1) and applying traction from outside. The fluid started escaping out when traction was applied on the hook as well as on the limbs attached to obstetrical chains. When about 40-50 liters of fluid came out, and the anterior half of the foetal body that is head, neck, fore limbs and a part of thoracic area were seen hanging out of the valvar lips, it was again held up.

Simultaneous gynaecological examination indicated, still more fluid in the foetal body, which prevented the delivery of young one. The long handled eye hook was inserted into the foetal body through the already incised area to widen the space for escape of remaining fluid. Traction was again applied on the already delivered foetal body resulted in pumping out of the remaining fluid. Ultimately when another about 40-50 liters of fluid had escaped, the entire foetus came out.



Fig 2 Ascitic Calf – Note the Circumference of Foetal Body and Loose Skin, After Release of Fluids.

The circumference of the foetal body around thoracic and abdominal area was almost 3-4 times larger than that of a normal fully grown calf. The skin had become very loose due to excessive accumulation of fluid in the foetal body (Fig. 2). Post-delivery care of animal included 20 liters of fluid therapy, along with antibiotics oxytocin in divided doses, calcium therapy and liver extract for five days. The animal got recovered and was discharged on the 4<sup>th</sup> day.

### Discussion :

Foetal ascites, characterized by excessive accumulation of liquid in the abdominal cavity of the foetus, usually results in difficult parturition. It may occur in any species but has often been reported in cows. It is occasionally associated with a dropsical condition of the uterus, mesotheliomas of the foetal abdominal and has been observed associated with brucellosis (Roberts, 1976). According to Sloss & Dufty (1980), foetal ascites may occur due to over production or inefficient removal of peritoneal liquid. The factors causing ascites in the foetus and in the post-natal animals are thought to be basically similar. Obstruction of lymphatics for various reasons, may prevent disposal of the peritoneal liquid. On the other hand, the increase in hepatic lymph occurs in cases of liver congestion. This may be linked with the diminished urinary excretion of water (Jubb & Kennedy, 1970) & disease of kidney (Fleming, 1941).

In the present case, the animal had completed its gestation length and the birth of the calf proceeded normally, until it was stalled at the pelvic inlet due to the enormously distended thoracic and abdominal area of the foetus. History of abdominal enlargement and excessive expulsion of the liquid by the animal, was suggestive of the fact that,

probably foetal ascites associated with dropsy of the foetal membranes. Williams (1948) and Fleming (1941) have also reported association of foetal ascites with other foetal dropsies like foetal anasarca, oedema of the chorion, foetal hydrothorax and with amino-allantoic dropsy.

Drainage of the accumulated fluid from the foetal body, being the main aim to relieve dystocia in such cases, was done by puncturing the chest cavity as has been reported by Williams (1948), Roberts (1976) and Arthur (1996). The calf was taken out by manual traction following the escape of fluids. Although physically animal was in a good condition at the time of discharge, nothing can be said about its future breeding potential, without feed back information from the owner.

The authors are of the opinion that diagnosis in such cases is of utmost importance to deliver the affected foetus through vagina. Caesariotomy if resorted to, will also require, reduction in size of foetus by releasing the excessive fluid from the foetal body, for effecting the delivery through the incision site. Moreover, caesariotomy may end up in additional complications which can be avoided in case of pre-vaginal delivery, if the cervix is fully dilated.

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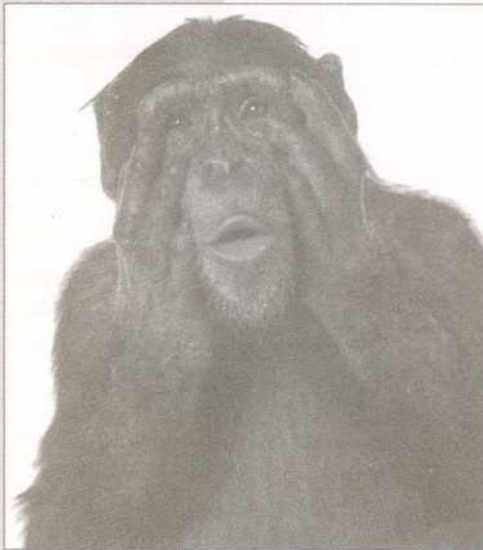
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## Role of Floxidin® (Enrofloxacin) in Retention of placenta

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### Introduction :

Retention of placenta or foetal membrane is one of the major threats to the dairy economy as further fertility is affected due to increase in calving to conception interval (Blood *et al.*, 1989). Foetal membranes will be expelled within 24 hours after calving in healthy animals but retention of placenta occurs in cows which are deficient in nutrients (under nourished) or due to other infectious agents. Retained foetal membranes can be removed forcefully but it may cause post-partum septic metritis. Several treatments are being followed in order to expel the retained placenta and to avoid acute metritis and severe toxemia. Enrofloxacin (**Floxidin**® from Intervet India Pvt. Ltd.) is one such broad spectrum antibiotic used to avoid toxemia in cattle.

**Floxidin**® (Enrofloxacin) is a fluoroquinolone antibiotic. It can be used in treating both Gram-positive and Gram-negative infections (Gatne & Ranade, 1996 and Bottner *et al.*, 1998) at the rate of 2.5 – 5.0 mg/kg body weight intra-muscularly. Its action on the infectious agents during retained placenta is very well documented and found very effective.

### Materials and Methods :

Observations were recorded at Main Research Station (dairy), Dharwad. About sixty seven calvings were recorded, out of which ten animals were diagnosed as retained placenta cases. The animals were on normal routine of nutrition with strict vaccination programmes for epidemic diseases and

regular deworming were also carried out. Animals were maintained under standard managerial practices.

### Results and Discussion :

Cows which had retained placenta even after 24 hours of calving were separated from the herd. The exposed part was pulled gently with mild pressure manually and hanging portion was cut from outside. After removal of placenta, they were treated with **Floxidin**® (Enrofloxacin) at the dose rate of 5.0 mg/kg body weight from 3-5 days, in addition to that Analgesics and antihistamine injections were also given through intra-muscular route for a period of 3 days. Animals treated with **Floxidin**® (Enrofloxacin) responded well within 3-5 days, 30% of the animals were treated for just 3 days and remaining animals were injected for 5 days. The discharge (lochia) which was foul smelling initially became clear without any smell. The discharge was clear on the 4<sup>th</sup> day and the animals were observed in first post-partum oestrus as early as 20 days after parturition. Initially, animals were reluctant to eat, became normal after 2 days with normal increased production.

Animals which were treated for 5 days, showed clear discharge on 4<sup>th</sup> day as compared to 3-days treated animals but involution of the uterus was noticed early in 5-days treated animals than 3-days treated animals.

It could be concluded that **Floxidin**® (Enrofloxacin) is effective in treatment of retention of placenta which enables early

cleaning of debris, lochia and normalizes the discharge within short period and in turn it helps the animal to come to early first post-partum oestrus.

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## Evaluation of Panacur® SC 2.5% as an Anthelmintic with Selenium and Cobalt in Lactating Buffaloes and Buffalo-calves

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### Introduction :

Worm load in domestic animals is the most important factor responsible for reduced production and performance. Significance of the worms can be gauged from the fact that large categories of worms affect the domestic animals which include round worms, flat worms, liver flukes and tape worms etc. The problem of worm load is more acute in those animals which are grazed. Animals which are malnourished, are more prone to heavy worm load.

There are several problems related with management of parasitic infestation in animals (Armour, 1980). The epidemiology depend on the husbandry practices (Michele, 1969) and nutritional status of the animals (Morley, 1980). The problem of the worm load is more acute, where the animals are grazed on native grass and the climate is suitable for growth of worms (Rose & Jacobs, 1989). Thus, where specific pasture grazing is not practiced, the problem of worm load is a major cause of morbidity and production losses.

It is also now well established that specific dietary deficiencies contribute to heavy worm load. The effect of these dietary deficiencies could be direct and indirect. For example, it has been demonstrated that animals fed on feeds, deficient in **Cobalt**, **Selenium** and **Phosphorus**, have higher worm load than balanced feed receiving animals. This could be due to anaemia caused by the deficiencies or could indirectly be due to lowering of the general resistance (Radostis *et al.*, 1994).

In India, feeding of micro- and macro-minerals is not practiced routinely. It would be therefore, advantageous to include important elements like **Cobalt** and **Selenium** along with specific anthelmintic drug. Sub-clinical helminth infestation is a major problem in domestic animals and hence, treatment should be directed towards these group of animals. It is therefore, advisable to go for strategic deworming treatment (Herd, 1987).

The present field trial was planned to investigate the efficacy of **Panacur® SC 2.5%** (Intervet India Pvt. Ltd.), a formulation containing **Fenbendazole**, **Cobalt** and **Selenium**.

### Materials and Methods :

Twelve buffaloes (between 4-7 years of age) and eight buffalo-calves were selected for this study.

1. **Housing :** The buffaloes were housed in the shed. After milking, the animals were taken for grazing to outside field. The buffaloes belonged to two organised farms at Bhilwadi, Sangli district. The buffalo-calves were housed in the shed and were partially stall fed and were also taken for grazing. All these animals belonged to different farmers and were not from the same herd.
2. **Feed and Water :** The buffaloes were fed on hay, sugarcane plant and concentrate. The concentrate consisted of cottonseed cake but no mineral mixture was added. The concentrate was offered before milking whereas, sugarcane plant and hay / grass was fed *ad libitum*. Water was offered 2-3 times a day.

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The buffalo-calves were fed on hay / grass or sugarcane plants. For majority of these calves, no concentrate was offered. Water was offered 2 - 3 times a day. The animals were fed individually.

3. **Complete Blood Count (CBC) :** The haematological parameters viz., PCV (Packed Cell Volume) & TEC (Total Erythrocyte Count) were evaluated as per Jain (1986) and Hb (Haemoglobin) was estimated by adopting Wong's method as described by Kolmer *et al.*, (1969). Blood was collected in EDTA (Ethylenediamine tetra-acetic acid) vials and immediately taken to the laboratory for further examination. Peripheral blood smears were stained with Giemsa and examined for blood protozoan parasite.
4. **Faeces Examination :** Freshly voided faeces were collected and examined for worm load by modified McMaster technique (McKenna, 1981)

#### Criteria of Inclusion of Animals :

The animals were initially examined clinically. Animals, treated with any anthelmintic during the last one year, were not included. The faeces of the selected animals were collected and examined for egg count. Only those animals which had egg count more than 400 per gram (EPG) of faeces, were included in the study. Experimental animals were drenched with **Panacur® SC 2.5%** at the dose of 5 mg/kg of body weight.

#### Post – treatment Observations :

The buffaloes and buffalo-calves were observed post-treatment as under :

- a. 1<sup>st</sup> day
- b. 14<sup>th</sup> day

Blood was again collected on 14<sup>th</sup> day for CBC. Faeces was also collected for egg count (EPG).

#### Recovery Evaluation Criteria :

The animals were treated on individual basis. The criteria were based on improvement in the general condition, egg count (post-treatment), and improvement in the blood count parameters.

**Observations :** On each day of the observation period following parameters were recorded.

1. Rectal temperature
2. Feed consumption
3. Faeces and urine output
4. Milk yield in lactating animals
5. General clinical impression
6. Any other relevant observation.

#### Results and Discussions :

Estimation of worm load in animal is difficult. The best method is to count the actual number of worms at the time of post-mortem of the dead farm animals. Another practical method is the egg count in faeces, although egg counts depend on several factors (McKenna, 1981). In the present study, degree of infestation was based on egg count (EPG). Many animals studied, showed worm count ranging from 2000 - 3000 eggs per gram (EPG) of faeces. These animals also exhibited other signs such as, unthriftiness, weight loss, emaciation and reduced production.

Examination of faeces revealed that the buffaloes and the calves infested with mixed worm load. The helminths identified were :

*Trichostrongyle sp.*

*Strongyle sp.*

*Toxocara sp.*

None of the animals, included in the study, showed liver fluke infestation.

**Panacur® SC 2.5%** found to be tolerated well in all the animals treated. No adverse reaction was recorded. In lactating animals, however, on the second day of administration, milk yield was reported to be reduced by 0.5 to 1 litre, which was only transitory. The details of the observations in respect of each species is given in Table I & II.

From the hematology, it is evident that most of the animals included in the study had moderate degree of anaemia. Blood from these animals were also examined after 14 days of treatment. The results suggest that administration of **Panacur® SC 2.5%** resulted in elimination of most of the parasites based on measurable parasite eggs could be demonstrated in majority of the animals after treatment. **Panacur® SC 2.5%** also resulted in improvement in general condition in calves, specially the skin coat appearance and general thriftiness. In buffaloes, post-administration, milk yields were found to be significantly elevated from  $6.0 \pm 0.33$  kg per day to  $7.03 \pm 0.2$  kg per day (Table-I). The increase was, however, consistent from 3<sup>rd</sup> day up to the period of study. There was also improvement in general condition of the lactating animals.

Rapid recovery from anaemia could be because the supply of **Cobalt** and **Selenium** along with the drug. **Cobalt** and **Selenium** deficiencies have been considered as important factors responsible for worm loads (Radostits *et al.*, 1994). The efficacy of Fenbendazole as a broad spectrum anthelmintic has been well documented. The new product, which contains **Cobalt** and **Selenium** should offer more advantage. It is speculated that correction of the deficiency of two trace elements would also improve the resistance of the animal for future infection and minerals will also correct

anaemia caused due to worm load (Radostits *et al.*, 1994).

A number of strategies have been recommended to control parasitic load in domestic animals in India. Control measures directed towards pasture or barn management is difficult to achieve and hence, the plausible approach is to carry out strategic or tactical treatment. In India, most favoured and commonly adopted method is strategic treatment, whereas the tactical treatment is used only when an outbreak or strong risk factors, such as heavy rains, are encountered.

In the present trials, use of **Panacur® SC 2.5%**, in lactating buffaloes and calves showed encouraging results. The efficacy of Fenbendazole in helminth infestations is well known, but in the formulation evaluated, supplementation of **Cobalt** and **Selenium** also resulted in faster recovery in hematological indices. This product appear to be rational and promising under Indian conditions, where farmers do not follow micro-mineral supplementation. Correction of the deficiency would also lower the risk of re-infestation.

Another important point to emphasis is that although for the present trials only some animals from a farm were included, but when strategic preventive treatment for worms is practised, it is necessary to treat the entire group of animals or else, re-infestation will be very common.

It should, however, be emphasised that post-treatment, supplementation of minerals is of paramount importance and it should not be construed that supply of **Cobalt** and **Selenium** with the drug would be sufficient to correct the deficiency. The farmers should be advised to feed balanced feed and supplement minerals.

**Table I : Hematology and Milk Production in Buffaloes Treated with Panacur® SC 2.5%**

Sl. No.	Hb (g %)		PCV (%)		TEC (m/cmm)		Milk yield (Kg/ day)	
	BT	AT	BT	AT	BT	AT	BT	AT
1.	8.2	9.6	32.1	33.6	3.4	3.8	6.2	7.2
2.	7.6	8.8	28.8	31.2	3.2	3.85	5.0	6.75
3.	6.6	7.4	26.0	30.2	2.88	3.55	5.5	6.0
4.	6.4	7.4	27.5	29.8	2.9	3.45	5.0	6.0
5.	8.4	8.6	33.0	34.0	4.1	4.15	7.0	7.0
6.	6.5	7.4	30.0	32.0	3.85	4.00	7.0	7.5
7.	9.4	9.6	38.5	39.0	5.1	5.25	7.2	7.5
8.	8.6	9.0	36.0	38.0	4.85	5.15	7.0	7.5
9.	9.4	10.2	38.0	38.5	5.0	5.05	8.0	8.0
10.	5.5	7.6	26.2	31.0	2.55	3.45	4.5	6.0
11.	7.4	7.8	28.0	31.4	2.85	3.12	5.0	6.5
12.	6.6	7.2	26.5	28.4	2.95	3.2	5.5	6.5
Mean ±	7.55	8.2	30.87	33.0	3.63	4.0	6.0	7.03
SE	0.36	0.3	1.3	1.0	0.27	0.22	0.33	0.2

BT : Before Treatment; AT : After Treatment

*“ The greatest thing is meditation. It is the nearest approach to spiritual life, the mind meditating. It is the one moment in our daily life that we are not material, the soul thinking of itself, free from all mater, the marvellous touch of the soul”*

**- Swami Vivekananda**

**Table II : Efficacy of Panacur® SC 2.5% on Heamatology of Buffalo-calves**

Sl. No.	Hb (g %)		PCV (%)		TEC (m/cmm)	
	BT	AT	BT	AT	BT	AT
1.	7.8	8.3	3.6	3.7	27.0	31.0
2.	8.2	8.7	3.5	3.7	32.0	32.5
3.	7.6	7.8	3.1	3.3	28.0	30.0
4.	6.4	8.2	2.4	3.2	22.4	24.6
5.	10.2	11.0	3.8	4.2	36.0	36.4
6.	8.2	8.4	3.2	3.6	29.0	32.2
7.	8.4	8.8	3.2	3.6	31.2	34.4
8.	6.8	7.4	2.85	3.2	27.0	33.1
Mean	7.85	8.58	3.2	3.56	29.1	31.8
± SE	0.4	0.38	0.16	0.12	1.4	1.24

BT = Before Treatment; AT = After Treatment

### Conclusion :

1. **Panacur® SC 2.5%** was found to be an effective anthelmintic under field conditions for treating animals infested with *Trichostrongyle* sp. *Strongyle* sp., and *Toxacara* sp. of worms.
2. Recovery parameters in terms of improved haematological indices were recorded 14 days post-treatment.
3. **Panacur® SC 2.5%** can be advised as a strategic anthelmintics and supplementation of **Selenium** and **Cobalt** should render animals less risky for reinfestation.

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**Case Report : Therapeutic Efficacy of Berenil® vet 7% RTU (Ready to Use) Injection against Haemopratozoan Infection with Special Reference to Babesiosis in Canine and Cattle.**

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The preliminary field trial on the efficacy of **Berenil® vet 7% RTU (Ready to Use)** injection was carried out in natural haemopratozoan infection in the animals, particularly showing haemoglobinaemia or the blood smear examination indicating piroplasmic bodies in erythrocytes. Mostly, the suspected animals suffered loss of appetite (anorexia), fever, weakness, anaemia, occasional vomiting, diarrhoea etc. During the period of studies, fifteen cases consisting of six dogs and nine other like calves, cows and buffaloes, suffering either due to *Babesia* sp. or mixed protozoal infections. Trypanosomiasis (Surra), Ehrlichiosis and Theileriosis, diagnosed on clinical history or by blood smear examination as mentioned in the table, were treated with deep intramuscular injection of **Berenil® vet 7% RTU (Ready to Use)** at a dose rate of 1 ml / 20 kg body weight.

**Test Substances :**

**Berenil® vet 7% RTU (Ready to Use)** is recently launched by Intervet India Pvt. Ltd. Each ml contains : 70 mg Diminazine Aceturate. Batch Number recorded as E9005, manufactured on September 1999 and expiry date mentioned as August 2001.

The present study was carried out between May to December, 2000.

The results including symptoms and treatment details have been presented in the table. There was no untoward side effects or toxicity throughout the observation period. All animals recovered from infection within 24 – 72 hours and regained normal health within one week.

*“ The best way to secure future happiness is to be as happy as is rightfully possible to day”*

**- Charles W. Eliot**

*“ Yesterday is a cancelled cheque. Tomorrow is a promissory note. Today is ready cash. Use it.”*

**- Anonymous**

\* Intervet India Pvt. Ltd., 412, Thakur Mansion Lane, Somajiguda, Hyderabad – 500 082.

Table : Showing Details of Clinical Symptom and Haematological Examination of Dogs/Livestock and Therapeutic Results of Berenil® vet 7% RTU (Ready to Use) Injection.

Sl. No.	Description of Animal	Symptoms recorded	Blood Smear (B/S) examination	Treatment Berenil® vet 7% RTU (Ready to Use) Injection	Results
<b>CANINE</b>					
1.	German Shepherd Dog (GSD), Age : 1-1/2 years CID dog Sex : female Bareilly	Fever (103.4°F), Lethargic, Off feed, Debility.	Annular piroplasmic bodies in RBC (10% cells) poikilocytosis ( <i>B. gibsoni</i> ) Neutrophilia (60%), Hb 10.6 g%	0.75 ml intra-muscularly injected	Temperature reduced in 24 hours, Normal RBC shape could be seen after 3 days without 30 days piroplasmic bodies
2.	German Shepherd Dog (GSD), Age : 1 year, CISE Dog, Sex : male Hardwar	Off feed, fever (103.2°F) Pale M/m, Occasional vomiting.	Ring shaped Piroplasmic bodies (5% cells) in the RBS ( <i>B. gibsoni</i> ) Hb (8.6 g%) Neutrophilia (69%)	1 ml intra-muscularly injected	The dog regained appetite within 48 hours. B/S was found negative for <i>Trypanosoma sp.</i> and <i>Babesia sp.</i>
3.	Doberman dog, Age : 3 years, RPF Sex : female Varanasi	Normal temperature (102.2°F) Debility / Rough haircoat, Occasional vomiting, Bronchitis Pulse rate : 66/minute Respiration rate : 48 / minute Dyspepsia	Presence of <i>Ehrlichia morula</i> in monocytes and 5% RBC contained piroplasmic inclusion. Hb (10.2 g%), Neutrophilia (55%)	1 ml intra-muscularly injected Doxycyclin 1 tablet BD for one week	The dog slowly regained normal appetite after 72 hours and fully recovered within one week.

4.	German Shepherd Dog (GSD) Pup, Age : 3 months, CID dog Sex : male Lucknow	Anaemia, Off feed Fever (103.4°F) Vomiting Red urine once	Hb (4.29%) Neutrophilia (55%), 15% RBC contained piroplasmic bodies	0.5 ml intra-muscularly injected after giving Glucose Saline 5% drip	The remission of fever took 48 hours with return of normal appetite, B/s was found negative.
5.	Spitz, Age : 8 months, OPD case Sex : female Bareilly	Off feed, Debility Petichiae on conjunctive with jaundice, Pale M/m, fever (104°F)	Hb (8.0 g%), 15% RBC contained minute piroplasmic bodies and also <i>Trypanosoma sp.</i>	0.5 ml <b>Berenil</b> ® intra- muscularly injected after giving 5% glucose saline and antibiotics	The slow recovery could be seen after 3 days and took a week for full recovery.
6.	German Shepherd Dog (GSD), Age : 1-1/2 years RPF dog Sex : male Bareilly	Fever (104°F), Red urine, Debility Vomiting	10% RBC showed minute piroplasmic inclusion, Hb (8.4g%) Neutrophilia (75%)	Injected 1 ml <b>Berenil</b> ® intra-muscularly, Oxytetracycline 1 ml with Conciplex 1 ml, diluted in 5 ml sterile distilled water	The remission of fever occurred within 48 hours, B/S was free of piroplasmic bodies, Regained normal appetite on 3 <sup>rd</sup> day.
<b>CATTLE</b>					
7-9.	3 Bull calves (BP Division), IVRI Crossbreed Age : 1-1/2 months Sex : male Bareilly	Fever (104.4°F) Red urine, Rough coat and Tick infestation, M/m pale, occasional diarrhoea	Average Hb (6.49%) Neutrophilia (55- 68%), Minute twin piroplasmic bodies in erythrocytes (10% cells possessed such inclusion) <i>B. bigemina</i> .	1 ml <b>Berenil</b> ® vet 7% RTU intra-muscularly injected teach. <b>Avil</b> ® and Ringers lactate	The temperature reduced stepwise and full remission occurred on 3 <sup>rd</sup> day, No red urine or RBC contained piroplasmic bodies.

10-12.	3 Bull calves (Anatomy Division) Cross breed, Age : 3 months Sex : male bareilly	Depressed appetite, Red urination, Normal temperature	No piroplasmic bodies in RBC Hb (8.5 g%)	3 ml <b>Berenil® vet 7% RTU</b> intra-muscularly injected to each calve.	The red urination ceases and the calves regained appetite.
14.	Cross breed Jersey cow, Age : 5 years Sex : female bareilly Agalactia	Post-parturient fever, continued for one week Followed by Red urine, Anorexia and	Minute pear shaped Piroplasmic bodies in 10% RBC ( <i>B. bigemina</i> )	15 ml <b>Berenil® vet 7% RTU (Ready to Use) Injection</b> Intra-muscularly with <b>Avil®</b> and <b>Belamy!</b>	The animal regained appetite within 24 hours, voiding normal urine, body condition improved.
15.	Buffalo, Age : 1 year, Out Patient Department(OPD), IVRI Sex : male Bareilly	Fever Depressed appetite Red urine	Piroplasmic inclusion bodies in RBC	5 ml <b>Berenil® vet 7% RTU (Ready to Use) Injection</b> Intra-muscularly injected	Animal recovered in 2 days.

*“ Karma - Yoga means, even at the point of death to help any one, without asking question. Be cheated millions of times and never ask a question, and never think of what you are doing. Never vaunt of your gifts to the poor or expect their gratitude, but rather be grateful to them for giving you the occasion of practising charity to them ”*

**- Swami Vivekananda**



## Case Report : Efficacy of Berenil® in Bovine Protozoan Dermatitis

**R. Mani**

Veterinary Dispensary, Animal Husbandry Department, Tiruvarur, Kodavasal-610 001, Trissur, Tamilnadu

Clinical cases of protozoan dermatitis are rare in farm animals. Bovine dermatitis due to protozoa is caused by *Besneitia* sp. (Blood *et al.*, 1983), where painful swelling developed at the ventral surface of the body, causing difficulties with locomotion. The aim of this article is to present a case of protozoan dermatitis, recorded at Veterinary Dispensary, Kodavasal recently.

During the months of June and July 98, seven cases of typical dermatitis were reported at Veterinary Dispensary, Kodavasal. The clinical symptoms observed were lesions, confined mainly to the neck region and sometimes at the chest and abdomen. There was no loss of appetite or rise of temperature. All the animals were debilitated and conjunctive was icteric. Haemoglobinuria was absent. Pre-scapular and pre-femoral lymph glands were enlarged, the latter being noticed prominently. The characteristic skin lesions were circular, dry, gangrenous dermatitis which later sloughed of exposing the subcutis. There was no pruritis or any discharge present. This clinical picture had suggested some involvement of blood parasite and hence, ear vein blood smear was stained with Giemsa and got examined at A.D.I.U (Avian Disease Investigate Unit), Thanjavur. Tentatively animals were treated with **Berenil®** (Intervet India Pvt. Ltd.) at the dose rate of 10 mg/kg body weight and external applications were avoided.

### Discussion :

Blood smear examination revealed, *Anaplasma marginals* infection, conforming

the protozoan involvement causing the dermatitis and recovery was noticed with **Berenil®** injection parenterally. The occurrence of this disease was reported last year locally during the same period which suggests the prevalence of vector ticks that transmit the disease seasonally at the end of summer months. Affected animals were belonged from the same area and no mortality was reported. Absence of haemoglobinuria may be due to destruction of the affected erythrocytes, may be destroyed by phagocytosis.

### Summary:

Seven cases of bovine typical protozoan dermatitis were successfully treated with **Berenil®** (Intervet India Pvt. Ltd.) at the dose rate of 10 mg/kg body weight at Veterinary Dispensary, Kodavasal. *Anaplasma marginale* was the causative agent for this typical dermatitis.

### Acknowledgement :

The author is thankful to the Director of Animal Husbandry, Chennai for providing facilities for this work and Regional and Joint Director of Animal Husbandry, Tiruvarur who has extended encouragement.

### Reference :

Blood, D.C. and Henderson, J.A., and Radostis, O.M. (1989). Veterinary Medicine, 7<sup>th</sup> Edn., *The English Language Book Society*, London

## Case Report : Effect of Gonadotrophin Releasing Hormone (GnRH) on Reproductive Performance and Steroid Profile of Anestrus Suckled Surti Buffaloes

R. G. Shah, V. B. Kharadi, A. J. Dhami, P. M. Desai and F. S. Kavani

Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Science & Animal Husbandary, Anand-388 001

The effect of GnRH (Fertagyl from Intervet India Pvt. Ltd.) on post-partum (day-40) true anoestrus Surti buffaloes was studied. Six animals were selected for this study and five were kept as control. Blood hormonal profiles ( $P_4E_2$ -17B) were estimated by standard radio-immunoassay procedures. The reproductive performance and ovarian events were recorded with the help of rectal palpation findings and were correlated to  $P_4$  and  $E_2$  profiles. Significantly, higher progesterone levels were observed in the GnRH treatment, did not influence the immediate  $P_4$  profile. The plasma  $E_2$ -17B levels following GnRH treatment increased for variable periods with a typical profile in three buffaloes, followed by oestrus. GnRH treated buffaloes resumed ovarian activity on day  $45.83 \pm 0.30$  post-partum which was significantly earlier in contrast to day  $64.00 \pm 2.27$  in four untreated response and all treated buffaloes came into oestrus by 21 day post-treatment in contrast

to none in untreated control group. The occurrence of first heat post-partum in GnRH treated vs control group was  $54.83 \pm 2.18$  vs  $96.75 \pm 14.39$  days respectively, the differences being significant. The treatment to ovulation interval in five of six buffaloes was  $15.40 \pm 2.58$  days with an overall mean of  $19.00 \pm 4.16$  days. The conception rate of GnRH treated buffaloes was 100 percent by 80 days post-partum. Out of them, 33 percent buffaloes conceived within 60 days post-partum and 67 percent conceived between 61-80 days post-partum. In control group, conception rate before day 60, 61-80, 81-90 and 121-150 post-partum was 0, 20, 20 and 20 percent, respectively. The remaining 40 percent control buffaloes conceived after 370 days post-partum. Thus, GnRH treatment has a good therapeutic action to initiate ovarian activity and to enhance reproductive efficiency in Surti buffaloes.

*“ There are three marks of a superior man : being virtuous he is free from anxiety; being wise, he is free from perplexity : being brave, he is free from fear”*

*- Confucius*

## Case Report : *Prolapsus ani et recti* in a Lhasa Apso Pup and its Successful Management

S. K. Tiwari, O. P. Mishra and S. P. Ingole

Department of Surgery & Radiology, College of Veterinary Science & Animal Husbandary, Anjora, Durg - 491 001, M P

Prolapse of the rectum combined with invagination of the anterior portion of the rectum is known as *prolapsus ani et recti* and it is less common in small animals (Bojrab, 1983). The cylindrical prolapsed mass may have the length of three to six inches. The parasitic infestation, constipation or diarrhoea may act as predisposing factor for the condition (Venugopalan, 1986). The present study place on record a rare case of *prolapsus ani et recti* which was treated successfully.

### Case History :

A three month old Lhasa Apso pup was referred to the Department of Surgery and Radiology with the complaint of dysentery alongwith severe straining from the last 3 days alongwith protrusion of a mass from the anus. The pup was off feed for the last 2 days. History revealed that deworming was not done so far. Careful clinical examination revealed presence of rectum as prolapsed mass (Fig.). The anal sphincter was also comparatively loose probably due to severe straining. The prolapsed mass was healthy and devoid of any injury. The pup was earlier treated with Baralgan® and laxatives by the owner. The pup was other wise healthy, it was decided to treat the pup surgically by application of sutures.



Fig. : Showing Prolapse of Rectum

### Treatment :

The pup was pre-medicated with Triflupromazine hydrochloride(15 mg) intramuscularly, 15 minutes prior to the start of the operation. The area around the anus was prepared for aseptic surgery. The Lignocaine hydrochloride (2 %) was infiltrated around the anus to desensitize the region. The prolapsed mass was thoroughly cleaned with Savlon and dried up. Then Povidone iodine was applied on it. The ice cubes were applied to minimize the oedema and reduce the volume of prolapsed mass. Over this liquid paraffin was applied for lubrication. Since, there was no injury to the rectal wall, therefore, it was repositioned back into the abdomen and purse string sutures were applied using silk No. 1 and a bow knot was given after leaving small space for defecation.

*“If I hold this cloth before me you cannot see me any more, though I am still as near to you as ever. So also, though God is nearer to you than anything else, get by reason of the screen of egoism you cannot see Him”*

*- Rama Krishna Paramhansa*

Post-operatively, the pup was given injection of **Floxidin®** (Intervet India Pvt. Ltd.) at the dose rate of 50 mg for 5 days, Dexamethasone (2.5 mg) for 3 days and Diclofenac sodium (10 mg) for 3 days. The pup was given liquid diet for 5 days and tablets of Dulcolax were given to soften the faeces. The purse string sutures were removed on 6th post-operative day.

### Result and Discussion :

After removal of the purse string sutures on the 6th day, there was no recurrence in a follow up period of 2 months. The rectum was established into normal position. There was no straining by the animal after correction. The treatment was adopted as per procedure outlined by Horney & Archibald

(1974). There was history of non-deworming of the pup right from the birth. Further, there was loosening of the attachment of the rectum to the perirectal tissue which might be responsible for the condition in the present case. Similar findings have been reported by Griener & Betts (1975). Application of the purse string sutures for correction of the prolapse is the simplest and most commonly used technique which worked successfully in the present case.

### Summary :

A case of *prolapsus ani et recti* in a Lhasa Apso pup and its successful management is reported.

### References :

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surgery. **2nd Edn.** *Lea and Febiger*, Philadelphia : pp. 191 - 204.

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Venugopalan. A. (1986). Surgical conditions affecting Intestines, Colon and Rectum. In Essentials of Veterinary Surgery **5th Edn.** *Oxford and FBH publishing Co. Pvt. Ltd.*, New Delhi : pp, 321 - 336.

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## Case Report : Efficacy of Berenil® vet 7% RTU (Ready to Use) in Cases of Some Blood Protozoan Disease.

P.K. Srivastava, P. Agarwal and A.K. Datta\*  
Ghazipur Dairy Farm, New Delhi-110065

Thirty large animals and five small animals (dogs), suspected for blood parasites, were selected randomly at Ghazipur Government Hospital, New Delhi.

Out of these thirty randomly selected cases of the large animals, eight had clear signs of Babesiosis. No microscopic blood examination could be undertaken. Based on coffee coloured urine and other symptoms, the animals were treated for Babesiosis. **Berenil® vet 7% RTU (Ready to Use Diminazine Aceturate, from Intervet)** injection was administered at a dose rate of 1 ml per 20 kg body weight, by intra-muscular route. Though the first injection itself cured all the eight animals, but the dosage seemed to be on lower side for the buffaloes. Also, these animals were given hematinics and supportive therapies for normal production. The rest of the twenty two animals with a history of undulant fever, treated with antibiotics and antipyretics, were brought to the hospital. Blood examination was done and their haemoglobin was found between 7 to 8 G%. Animals were suffering from Anaplasmosis or Theileriosis, confirmed by microscopic examination of Giemsa stained blood slides. Out of twenty two cases, seven were confirmed positive for Anaplasmosis, and nine for Theileriosis. Though six blood samples were found negative for any parasitic

infection, however, considering the symptoms of anaemia, rough coat and undulant fever (temperature was between 102°F to 105°F), the cases were treated with **Berenil® vet 7% RTU**. All the bovines responded well. **Berenil® vet 7% RTU** was given along with **Avil®** (Pheniramine maleate, Intervet), Diclofenac Sodium and Paracetamol and Nutriliv forte was given as supportive therapy. In case of Theileriosis, treatment was given with **Berenil® vet 7% RTU**, **Avil®** and Diclofenac Sodium Plus Paracetamol. On day 2, the animals were given Oxytetracycline at the dose rate of 25 mg/kg, by intra-venous route. Along with Oxytin, Dextrose normal saline injection Nutriliv and Imferon injection were also administered.

In the small animals group, the dogs were reported with frequent temperature, anemia (Hemoglobin was between 6 to 8G%), and the blood pictures were positive for *Babesia sp.* No coffee-colored urine was seen. Hence, it became difficult to ascertain, but the *Rhipicephalus sp.* and red ticks were present. These were treated with **Berenil® vet 7% RTU** at the dose rate of 1 ml per 20kg bw. Supportive therapy, along with Verastan-plus and **Avil®** was given. The dogs responded very well and there was no anaphylactic shock.

*“ A man of stature has no need of status.”*

*- Charles H. Brower*

\* Intervet India Pvt. Ltd., 412, Thakur Mansion Lane, Somajiguda, Hyderabad – 500 082.

NEWS :

**SHRI RAMLAL AGARWAL INDIGENOUS MEDICINE GOLD MEDAL TO DR. D.B. SARODE**



**Dr. D.B. Sarode**

*“Dr. D.B. Sarode, Professor & Head, Department of Medicine and Principal Investigator (wildlife health), Nagpur Veterinary College, Nagpur has been honoured with Shri Ramlal Agarwal Indigenous Medicine Gold Medal by Indian society for veterinary medicine at Sher-E-Kashmir University of Agricultural Sciences & Technology, Jammu (J&K) during The National Conference in veterinary medicine on 9th April 2001. This distinguish honour of Gold Medal with citation and a cash award was presented to Dr. D.B. Sarode by Hon’ble Minister of Agriculture & Animal Husbandry, Janab Choudhary Mohammed Ramzan of J&K.*

*This honour to Dr. D.B. Sarode was in recognition of his meritorious contribution of research in indigenous (alternative) medicine in the field of veterinary science.”*

**- Editor**

**DR. SUSHOVAN ROY AWARDED PACE 2000**



**Dr. Sushovan Roy**

*“Dr. Sushovan Roy, Associate Professor and Incharge, Department of Preventive Medicine, College of Veterinary Science & Animal Husbandry, Anjora, Durg (Chhattisgarh) has been conferred with the first PACE 2000 award for Pet excellence. Dr. Roy has been awarded a memento, certificate and a cheque for Rs. 20,000 at a function organized at New Delhi. He has receipt of number of awards like Alarsin Gold Medal (1984), Shri Ramlal Agrawal National award (1990), P.Z. Sharma Gold medal (1999), he was also awarded the best teacher award (2000) and Pasudhan Silver Jubilee award (2000).”*

**- Editor**

## NEWS :

**Floxidin® Injection in the Treatment of Adipsia in Cattle**

Adipsia (abatement in the intake of drinking water) was recorded in stall-fed and grazing cattle even for four days in all seasons inclusion midsummer. All breeds showed adipsia. Feeding habits were normal. Among adipsia cases, lactating cows were recorded 60%, dry cows and working bullocks were accounted 20% each. Milk yield reduction was upto 60% and bullock showed a reduction in working capacity from third day of adipsia. Loss of body weight was noticed from the 4<sup>th</sup> day. Some animals were seen to take a reduced quantity of water ever for months.

The affected animals avoided liquid feed even when bran given with *ad libitum* water, some animals took bran alone by dipping the mouth to the bottom of the feeding trough and avoided sipping the liquid.

On clinical examination, temperature, mucus membrane, pulse & respiration rate were found normal. No appreciable change in blood picture was seen. Auscultation, rumen pappation and rectal examination revealed no abnormality. Dung was almost normal. Urine frequency and quantity were found markedly reduced. Rumen liquor pH and microflora motility were almost normal. Animals with slight acidic and alkaline or normal ruminal pH irrespectively showed adipsia.

Previously, the affected animals were treated with parental liver extract with B complex, antihistamin, sodium bicarbonate, anti-inflammatory drugs including nonsteroidal preparations, oral sodium bicarbonate with

jaggery, acetic acid, rumenototics, pulvis ginger, chiretta, picrohozia and native therapy like puncturing the sublingual vessels and certain savoury drugs. After these treatment some animals took a little quantity of water at one time only and again showed adipsia. In general, response to these treatment was poor.

These animals were usually taking normal feed like dry bran, dusty straw or hay, green, concentrates and liquid feed. On depraved eating, when dusty dry feeds were feed, they inhaled the dust from dry fodder and powdered bran. Hence, it was hypothesised as these animals were affected by sub-clinical pulmonary infection and the initial symptom might be adipsia. Later, some of these animals showed mild to severe cough and adipsia.

Hence, respiratory system acting antibiotic trial was conducted without any supportive drugs. Thirty animals were divided randomly into three groups. Group I had Ampicillin 1 g with Cloxacillin 1 g in 7 ml of distilled water. Group II had Streptomycin sulphate 2.5 g, Procaine pencillin G 15,00,000 i.u. and Pencillin G sodium 5,00,000 i.u. in 7 ml of distilled water. Group III had 1.5 g of Enrofloxacin **Floxidin®** – Intervet India Pvt. Ltd. All these drugs were administered intra-muscularly. Each group had treatment daily for three days.

In Group I, 30% animals showed good response after 24 hours, 50% after 48 hours and the remaining 20% after 72 hours. All the treated animals were started drinking

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little or more water sporadically from 18 hours onward and water intake was normal on the completion of 96 hours.

In Group II, even after two days the response was very poor and on the 3<sup>rd</sup> day little response was noticed.

In Group III, 80% animals showed remarkable response within 24 hours and water intake was found normal in all animals and regained yield within 48 hours, except one

animal which needed a 3<sup>rd</sup> day treatment.

Among the three controlled animals, one took a little quantity of water on second and third day. On humanitarian ground, after 72 hours all the animals were given Enrofloxacin **Floxidin**<sup>®</sup> until they drink water normally.

From the history it is also observed that, usually all the cattle owners on mercy and economical grounds started forced water drenching from third day of adipsia with or without drugs of their choice. Among

these animals, some showed aspiration and some showed spontaneous recovery from 15 to 60 days.

Hence, from this study it is observed that adipsia in cattle may occur due to sub-clinical pulmonary infection from dry feed which may be successfully treated with Enrofloxacin (**Floxidin**<sup>®</sup>) within 72 hours. Further detailed study with large number of animals is essentially required.

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Dear Reader,

"If you have any question on this article / news, kindly contact directly to Dr. T. Umakanthan, Veterinary Dispensary, Chinnamanur, Theni (Dist.), Tamilnadu-625 515" Telephone Number : 04554-65476 (R).

- Editor



**ABSTRACT :**

**1) Foot and Mouth Disease (FMD) Strikes Britain**

FMD has struck Britain particularly Devon in south west and cumbria in Notheast parts of the Country and till date, 1308 cases, including 17 fresh cases have been reported. Quarantine and slaughter of in-contact animals has been undertaken on a massive scale to stamp-out the disease from the country.

Nearly 13,66,000 animals have been earmarked for slaughter of which 8,88,000 have already been slaughtered. The compensation bill to the farmers is estimated to be 600 million pounds. This has also resulted in acute shortage of beef and the price has risen by 20.6%. Export of beef pounds this year.

Quarantine measures have resulted in the closure of all the national parks and also thousands of hiking paths which has hit tourism and the losses on account of this alone is estimated to reach 8 billion pounds this year

In the mean time experts are veering around to adopt vaccination in addition to "quarantine & slaughter" method for controlling the spread.

*(Times of India, Dt. 14/4/2001; Asian age, Dt. 16/4/2001)*

*Note : "With the increase of traffic of animals and animal products in the world, the out breaks of diseases, exotic in nature particular to a country, are likely to be common. Classical method of "quarantine & slaughter" may not be enough in the*

*future. Strategic vaccinations programme, using inactivated quality vaccines, may be the answer" - Editorial Board*

**2) Viruses Afflict Indian Vultures**

The population of vultures in India is found drastically reduced in the last decade. Dr. G.R. Ghalsasi of PDRC venkateshware Hatcheries Pune and Dr Andrew Cunningham of Zoological Society, Britain, have found viral infections—two strains of Adeno viruses and one of Birna virus—to be the cause of the disaster.

Disappearance of vultures is likely to cause unforeseen problems from the wild animal carcasses in forests.

*(Times of India, Dt. 28/3/2001)*

*Note : "Adeno and Birna viruses cause serious diseases and losses to poultry industry. A close watch on viral diseases of free flying and wild birds is necessary to protect poultry industry in India."*

*- Editorial Board*

**3) EUC Ban on Meat cum Bone Meal in Animal Feed**

Meat cum bone meal has long been banned in cattle feed as the main suspected source of Bovine Spongiform Encephalitis (BSE) infection. However, European Union Commission (EUC) has extended this recently to pig and poultry feed also, which many scientists do not seem to agree. Dr. Wiebe van der Sluis, Editor, World Poultry, says that, while it is not certain that variant CJD in man is due to eating beef – even of BSE infected cattle – and while people can still eat

## NEWS & ABSTRACT

beef from the same animal, it carries no logic to ban the meat cum bone meal to be used in animal feed.

[*World Poultry*, 2001. 17(1)]

### 4) Transgenic Chicks to Product Anticancer Antibodies

“Roslin institute” and “Viragen” have decided to collaborate to create transgenic chicken—which produce eggs containing new drug to treat many serious diseases including cancer—and then would be cloned.

The first gene to be given by Viragen to Roslin, will be used to produce antibodies to melanoma. Eggs containing antibodies to skin cancer is expected in a year and such potent drugs for number of cancers including those of lungs and intestines are intended.

Creation of transgenic birds (by “windowing technology”) and their cloning is not only precise in chickens but also quicker because of short generations time than in another animals.

[*World Poultry*, 2001. 17(1)]

### 5) Genetic Cow

Researchers at the Univeristy of Vermont USA have cloned a transgenic cow that is resistant to Staphylococcal mastitis. Gene encoding protein Lysostaphin was first tried to produce transgenic mice and later cow. The animals carrying this gene secrete lysostaphin in milk and that wards of staphylococci

(*Times of India*, 2001. Dt. 12/1/2001)

### 6) Progress Towards Development of Naked DNA Vaccines Against Parasitic Infections

Ramaswamy, K. (1999). *J. Vet. Parasitol.*, **13(1)**: 1-12.

The recombinant antigens for immunization, available as fusion proteins, are products of gene expression in Prokaryotic or Eukaryotic cells. However, it further involves lengthy procedures to purify the recombinant antigen for vaccine purposes. The recent advance is to introduce nucleic acid as plasmids (naked DNA) in vivo in to the host body, which is then taken up by various tissues which in turn produce antigens for APC (Antigen Processing Cells) to access and generate immune responses.

The author has reviewed the information on development of naked DNA vaccines on variety of protozoan infections and few helminth infections and has explained the mechanisms involved.

### 7) Occurance of Dirofilariasis in Lions and Tigers

Gupta, M.K., Prasad, K.D., Singh, K.K. and Haque, S. (1999). *J. Vet. Parasitol.*, **13(1)**: 77-78.

In three animals—Two lions and one tiger - belonging to a zoo near Ranchi, Bihar, the author have recorded clinical *Dirofilaria immitis* (heart worm) infection and it is confirmed by post-mortem examination.

- Compiled by Dr V.S. Narsapur

## READERS' COLUMN

### Comments / Suggestion on 'The Blue Cross Book' - 16 and Expected Articles for 'The Blue Cross Book' - 18

- 1. Dr. M. V. G. Ahobala Rao**  
Manager (Training Centre), GDMPMAC Union Ltd., Sangam Dairy, Dist. Guntur, Vaddlamudi-522 213, AP  
"Article by S. Nandi on Foot and Mouth Disease (FMD) is very timely and particularly when the entire world is feared about FMD. Article on efficacy of **Panacur® SC 2.5%** with information on the added advantage of **Selenium & Cobalt** on immunomodulation and haemopoetic mechanism is very impressive. Article on, 'Gynaecological Effect of Human Placenta Extract (HPE) in Cattle' is useful for economic & effective treatment of infertile cattle."
- 2. Dr. V. D. Padmanaban,**  
Editor, *Indian Veterinary Journal*, 7, Chamiers Road, Chennai-600 035  
"Publication may be advanced to make it current. Publication carries useful information. Get up and printing are excellent. Photographs are excellent."
- 3. Dr. I. K. Chaurasia**  
Jhungia Bazaar, Near Medical College, Gorakhpur  
"Many thanks for sending the issue of '*The Blue Cross Book*'-16. I went through this issue and also the previous ones. The contents published in the issue, is very useful to all the veterinarians, mainly to field veterinarians. It gives the new and valuable informations. Articles like "Use of **Prednisolone Acetate** (Intervet) in Corneal Opacity of Bovine" and "Use of **Receptal®** in Improving Conception Rate in Crossbreed Cows" are very useful to all veterinarians."
- 4. Dr. S. M. Jayadevappa**  
Prof. & Head, Department of Surgery & Radiology, Veterinary College, UAS, Hebbal, Bangalore-560 024  
"Case reports are of common nature which does not require introduction, history results and discussion, summary and reference. Unless, it is a very rare case like, Heterotopic polyodontia in a horse. I feel, a brief note should be sufficient."
- 5. Dr. P. R. Pandey**  
Manager (Veterinary), Simul Dairy, "Rameshwaram" H.B. Park, Shastri Road, Bardoli, Gujarat-394 601.  
"I liked this issue very much as it contains highly informative articles like "Efficacy of **Panacur®-SC 2.5%** (Fenbendazole along with **Selenium and Cobalt**) in Cattle" and "Bionomics of Infective Larvae of Common Nematodes of Domestic Ruminants and Viability"

## READERS' COLUMN

6. **Dr. R. Rajdohan**  
Veterinary Surgeon, Veterinary Hospital, Pondicherry-605101.  
"I liked this 16<sup>th</sup> Edition, because treatment of infertile animal by Human Placental Extract (HPE) is useful article to filed veterinarians. The quotation words are very nice."
7. **Dr. S. Shanmugam**  
Veterinary Hospital, Dharmapuri (Dist)-636705  
"The infertility problems are common among cross breed animals. The article "Efficacy of Patented Human Placental Extract (HPE) in the Treatment of Infertile Animals" and "Efficacy of **Receptal**<sup>®</sup> (GnRH analogue) on improvement of Conception Rate in Crossbred Cows" will surely help in treating such infertile animals."
8. **Dr. J. P. Varshney**  
Division of Medicine, Indian Veterinary Research Institute (IVRI), Izatnagar-243122, Bareilly, UP  
"The authors, who contribute articles may kindly be provided atleast one copy of the issue. My article "Squamous Metaplasia in a Dog" has been published in 15<sup>th</sup> volume, page no. 39. But neither a copy was sent nor informed."
9. **Dr. H. R. Parsani**  
Department of Parasitology, Veterinary College, Gujarat Agricultural University, Sardar, Krushinagar, Gujarat-385506  
"Very useful to the clinician academician (Researchers) as a ready references, Post-graduate research scholars could be benefited by having veterinary development and availing recent advance information. I will be sending an article entitled "Economic Importance of Ectoparasites in Sheep & Goat Within a Short Period."
10. **Dr. Tulsidas Nathani**  
1-CHH-2, Dadabri, H.B., Kota-324 009  
"Mailing '**The Blue Cross Book**'-16 to field veterinarians is a social service. The application of knowledge on larger scale is possible only when the state governments efficiently create systems to boost the morale of animal owners. World funding agencies should take measures for creating of systems, specialty for prevention of outbreak of diseases."
11. **Dr. Y. Kasper Reddy**  
Veterinary Assistant Surgeon, Veterinary Polyclinic, Guntur-522001, AP  
"The issue No. 16 is more informative. Please publish more articles on canines. Please give importance to field oriented articles. Thanking you."

## READERS' COLUMN

**12. Dr. R. K. Sharma**

Veterinary Surgeon & Physician, Veterinary Hospital, Sonari, Jamshedpur  
Jharkhand State.

"Thanks to Dr. A.K. Datta, Editor '*The Blue Cross Book*'-16 for sending this issue. It is an excellent book for the veterinarians. "Efficacy of **Panacur**<sup>®</sup>-SC 2.5% (Fenbendazole along with **Selenium** and **Cobalt**) in Cattle" is the best article with detailed information. I would like to suggest you that more of clinical cases may kindly be published."

**13. Dr. S. K. Modi**

Veterinary Assistant Surgeon, I/C Disease Investigation Laboratory, Mandla-  
481661, MP

"Thanks for this issue. It is very informative and provides latest information regarding filed conditions. I will be sending an article, 'Common Skin Ailments in an Elephant in Captivity!, its Care and Cure'. Kindly publish. I am working on elephants at kanha National Park time to time."

**14. Dr. S. Rattan**

Animal Production Specialist, 23, Sandhya Enclave, Majith Road, Amritsar-143 001

"As usual this issue is excellent compilation of articles which can be path showing to field veterinarians. The article "Efficacy of Patented Human Placental Extract (HPE) in the Treatment of Infertile Animals" is worth and informative for the treatment of infertile animals. Dr. A. K. Datta deserves a big round of applause for his dedication to '*The Blue Cross Book*'-16 for the veterinary profession."

**15. Dr. Joyjit Mitra**

Vill-Mondolgathi, P.O. Bamangachi, North 24 Pargaras – 743706, WB

"It is nice to see the steady improvement of '*The Blue Cross Book*'-16. I appreciate your noble effort of publishing divergent cases of veterinary problems for the benefit of the field veterinarians. Please keep it up. Thank you for mailing the journal to me regularly. Please send me issue no. 15 which I have not received."

**16. Dr. S.K. Thakur,**

TVO, Jainagar (Koderma), C/O. Eng. H.P. Singh, Addi Bunglow Road, Jhumri  
Telaiya, Koderma - 825409, Jharkhand

"Kudos for publishing "Efficacy of Patented Human Placental Extract (HPE) in the Treatment of Infertile Animals". I request you to publish atleast one chapter on wildlife medicine and canine practice regularly."

## READERS' COLUMN

17. **Dr. Harish Verma**  
1658 A, New Prem Nagar, Street No. 2, Near Pauhathi Complex, Ludhiana-141001  
"16<sup>th</sup> Issue of '*The Blue Cross Book*' is an excellent combination of Review, Clinical and Case reports. Really, Akzo Nobel People are promoting the cause of animals and bringing awareness among veterinarian is an excellent way. Keep it Up!!!"
18. **Dr. Niranjana Sahoo**  
Assistant Professor, Department of Medicine, OUAT, Bhubaneswar, Orissa-751003  
"I will be sending article, on 'Efficacy of Anthelmintics Against Amphistome Infection in Cattle of a Rainfed District of Orissa.'"
19. **Dr. Omkar Prasad Tiwari**  
**Govt. Veterinary Hospital Campus, Near Shyam Talkies, Bilaspur, Chattisgarh(CG)-495 001**  
"Persistence of Foot and Mouth Disease Virus in Meat, Milk and their products is excellently explained. I shall send article as mentioned below :  
i) Control, Management and Treatment of Mastitis in Crossbreed Cows (Bovines).  
ii) Distemper and Corona Virus Infections in Dogs."
20. **Dr. A.K. Bose**  
**Project Officer, Livestock Disease Control, Trivandrum-695001, Kerala**  
"Article on 'Persistence of Foot and Mouth Disease Virus in Meat, Milk and Their Products' is informative and useful. Kindly publish an article on 'Comparative study on quality of Foot and Mouth Disease Oil Adjuvant Vaccine, manufactured by IVRI and Indian Immunologicals.'"
21. **Dr. S.M. Reddy**  
Professor of Gynaecology and Obstetrics, Veterinary College, University of Agricultural Sciences, Hebbal, Bangalore-560 024  
"The issue is quite informative with photographs. I shall send an article on 'Receptal treatment in COD'."
22. **Dr. Chitta Ranjan Bapuli**  
**Joint Director, 1, Kedar, Chatterjee Lane, Behala, Kolkata-700 034, WB**  
"All articles, published in 16<sup>th</sup> issue, are very much informative. A review article on 'Rabies and its zoonotic importance' will be submitted soon."
23. **Dr. Uma Shanker**  
**Senior Scientist (Animal Reproduction, IVRI), C-99, Rajendra Nagar, Avastha Vikas Colony, Bareilly-243122, UP**  
"Thank you, for mailing '*The Blue Cross Book*'-16 to me regularly. One article of mine is expected in the 18<sup>th</sup> issue. I will send next article in July, 2001 please. Thanks to Dr. A.K. Datta for his efforts in promoting such type of scientific journal through Intervet India Pvt. Ltd., for veterinary profession in the country."

## GUIDELINES TO CONTRIBUTORS

"*The Blue Cross Book*" is published biannually. The contributions to the journal are accepted in the form of invited review articles, research articles (clinical / field studies), case reports, other information pertaining to animal health and production. The decision of the Editorial Board members will be final regarding acceptance of the article for publication. The manuscript should be typed on one side of the paper with double spacing except for footnotes and references for which single spacing be used. The style of reference citing should be strictly followed as shown below. The words to be printed in italics should be underlined. The manuscript should be arranged in the following order:

<b>Title</b>	: Note on the Outbreak of Pox in Sheep
<b>Name/s of author/s</b>	: K. Kumari, P.C. Chowdhri and P.K. Das
<b>Place of work</b>	: Department of Pharmacology, Bombay Veterinary College, Parel, Mumbai-400 012, MS
<b>Materials and Methods</b>	: In details.
<b>Results and Discussions</b>	: With the help of tables/ figures etc.
<b>Reference/s</b>	: For Periodical/s : Surname/s and initials/s of author/s, year of publication in parenthesis, abbreviated title of journal ( <i>italic</i> ), volume number ( <b>Bold</b> ), first and last page number/s.  e.g. Chhabra, D., Moghe, M.N. and Tiwari, S.K. (1996). <i>Ind. Vet. J.</i> , <b>82</b> : 1-3.  : <b>For Books</b> : Name/s of author/s, year of publication in parenthesis, title of the book, edition ( <b>Bold</b> ), name of publishers ( <i>Italic</i> ) and place.  Radostitis, O.M., Blood, D.C. and Gray, C.C. (1994). Veterinary Medicine, <b>8<sup>th</sup> Edn.</b> , <i>English Language Book Society (ELBS)</i> , London
<b>Tables and Figures</b>	: Tables are to be numbered in Roman numbers (I, II and so on). Each table should have a clear title. Figures should be of good quality and numbered in Arabic numbers (1, 2, 3 and so on).

Abstracts and sub-headings are not necessary for clinical articles and short communications. These should not exceed three typed pages. For case reports, history, observation, tentative and confirmatory diagnosis, line of treatment and follow up on the case should be given.

Authors are requested to confirm that the paper has not been published elsewhere and also to indicate details of postal address for communication along with telephone/fax with STD code etc.

We would appreciate if you kindly send us your manuscript (technical article) in Word File either by Floppy Disc or by e-mail: [adata@intervetindia.com](mailto:adata@intervetindia.com).

All manuscripts should be mailed to the following address :

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