AKZO NOBEL

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For the Veterinary Profession

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intervet

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

Contents — Jan 2002

PREFACE

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

Dear Readers,

I, on behalf of the Editorial Board Members of ***'The Blue Cross Book'***, thank you for your valuable suggestions and complements on the previous issue. It is a matter of great pleasure to me in presenting 18th issue of ***'The Blue Cross Book'*** for your perusal.

The country with its rich animal wealth is facing serious problems of different diseases, adversely affecting production in dairy, meat and poultry sectors. Government of India and State Government have already realised that sooner the production performance of existing livestock is improved,the earlier will improve the rural economy. Recently concluded decision on implementation of restructuring of breeding operation will help to increase quality of animals in coming years. But proper care to control diseases and prophylactic vaccinations of these quality animals will be utmost important, otherwise high production is not be possible.

We, **Intervet** in India with research background and balanced product portfolio (Pharma, Feed Additives, Hormones, Poultry and Livestock Biologicals), will continue to offer the best solutions to our customers in order to overcome this problem.

As field veterinarians are always eager to know the latest advancements in veterinary development, I trust, few articles, you will find interesting in this issue. Lastly, I request you to send us your suggestions once again.

Best Regards,

Dr. Hervé Laberthe

THE VETERINARY COLLEGE IN INDIA

COLLEGE OF VETERINARY SCIENCE, TIRUPATI

The Andhra Veterinary College affiliated to the Andhra University, was started at Baptla in the year 1955 under the control of Animal Husbandry Department, the Government of Andhra Pradesh. It was later shifted to Tirupati in 1957 temporarily on the 1st floor of S.V. Polytechnic. The college finally moved to its permanent abode, even before the building was inaugurated in 1962 by Dr. Neelam Sanjeev Reddy. Initially, the college was affiliated to the Sri Venkateswara University. With the formation of the Andhra Pradesh Agricultural University in 1964, the college was transferred to the administrative and academic control of the university. With the assistance of ICAR, new building complexes were constructed for pathology, parasitology, genetics, nutrition, poultry science and virology. The post-graduate hostel was constructed to provide additional accommodation for the post-graduate students in 1978. The town hospital was also constructed to acomodate the out patient clinic and was inaugurated by the Hon'ble Minister for Animal Husbandry in 1987 to facilitate treatment of animals in Tirupati town.

The educational pattern from the conventional method was changed to credit system, since 1967, on the lines of "Land Grant Pattern in the United States". This institution has received equipment from TCM, FAO and other International Institutions. Besides, a number of teachers were deputed for higher studies under technical aid of USAID.

As on August' 2001, 2282 graduates in veterinary faculty and 140 graduates from dairy technology have passed out from this institution. The institute was later upgraded to offer master degree in veterinary science. So far, 435 students have completed post-graduation studies from this college. Further, seven departments were upgraded to offer admission for Ph.D. students. So far, 60 scholars were awarded Ph.D. degree. At present, there are 438 under-graduate B.V.Sc. & A.H. students including B.Tech. (Dairying) students, and 107 girl students. Presently, 38 post-graduate students are pursuing their studies in various disciplines.

The college is also offering four year B.Tech. (Dairying) degree programme since 1983 with annual intake of 20 students and post-graduate courses in two disciplines, since 1995 for the students from, engineering stream. A separate teaching facility and a dairy plant were constructed for imparting theoritical and practical training in dairy technology.

The B.V.Sc. students after completing four and half years of study, undergo internship training for a period of six months in various well established veterinary clinics of the state Animal Husbandry department to acquire experience from the field and local clinical ailments.

Since 1994, the college is following the "Veterinary Council of India" (VCI) regulations in conducting the B.V.Sc. & A.H. course.

Students are being evaluated annually by extenal examiners.

The name of the university was changed to "Acharya N.G. Ranga Agricultural University", in 1997.

During 1997-98, three new departments were formed i.e., livestock production & management, veterinary public health & veterinary epidemiology and preventive medicine in addition to the existing departments as per the VCI norms.

Research :

Most of the departments of this college are involved in research in addition to teaching. The college received adequate research funds from various National and International agencies like ICAR, CSIR, DST, DBT, ICMR, IFS, INDOUSAID, HLRF, BARC, PL 480 for conducting a number of research schemes of projects. Recently, some of the faculty members were sent for overseas training on the latest advancements of science and technology.

Extension Activities :

The teaching staff of the college of veterianary science, Tirupati have actively participated in different extension activities time to time.

The department of animal nutrition conducts refresher courses for field veterinarians in modern practices for livestock. Farmers are trained in newer approaches to sheep and goat feeding. The college staff are actively involved in kissan melas which are conducted regularly.

The clinical and para-clinical departments conduct refresher courses to field veterinarians on the recent developments in veterinary practice and diagnosis. Department of animal reproduction and gynaecology conducts infertility camps. The staff are involved in lending advice to the farmers. Various departments are involved in lending advice to the farmers and social work by associating with NSS unit of college and conduct mass vaccination, deworming etc., particularly during natural calamities. The department of meat science & technology propagates use of pork and pork products in town and villages and popularises rabbitry and supplies rabbits to farmers. It offers consultancy service to farmers, forest officials in differentiation of wild animal meat in medico-legal cases.

Wherever there are outbreaks of diseases, following requests from Animal Husbandry department of the Government of Andhra Pradesh, scientists teams are deputed for diagnosis and to suggest precautionary measures to farmers.

Source : IAAP Souvenir (2001), August (25-27), P : 20-23.

"If, after all, you cannot destroy this "I", then let it remain as "I the servant". The self that knows itself as the servant and lover of God will do little mischief"

- Sri Ramakrishna Paramhansa

Mimosine Toxicity in Animals

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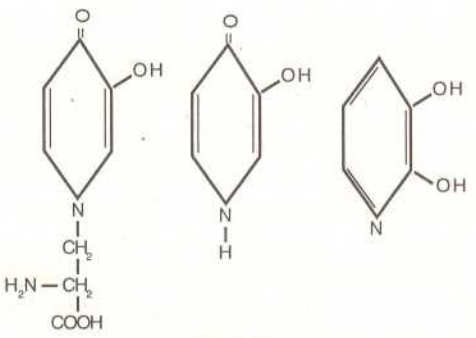
Subabul *(Leucaena leucocephala)* is a leguminous tree and its levaes are used as forage for livestock feeding. The leaves, young stems, flowers and pods are all excellent sources of proteins (25 to 35%), ß carotene and minerals. The leaf material of Leucaena is comparable to alfalfa or lucerne *(Medicago sativa)* leaf material in term of nutrients. Moreover, Leucaena leaves and pods are very palatable to animals. Inspite of excellent chemical composition and palatability, the use of Leucaena as animal feed is limited due to presence of an important toxic component mimosine. Most Leucaena contains about 3 to 5% mimosine in leaves and pods on dry matters (DM) basis. Further, in the growing tips of the leaves, the level may reach upto 12% on DM basis. The mimosine is a non-protein, free amino acid that is toxic to non-ruminants and unadapted ruminants. Besides, mimosine and its immediate degraded product i.e. 3-hydroxy-4 (1H)-pyridone (3,4 DHP), other anti-nutritional factors e.g. tannins, protease inhibitor and galactosamine gum are also present in Leucaena leaves. In present context, the toxicity of mimosine and its removal/ detoxification would be discussed briefly, taking care to animal feeding.

Structures :

Mimosine is chemically known as ß-[N- (3-hydroxy-4-oxopyridyl)][-µ-amino propionic acid. Endogenous enzyme system in Leucaena leaves can convert mimosine to 3,4-dihydroxy pyridone (3,4-DHP). Further, rumen microflora has the capacity of degrading mimosine to 3,4-DHP and further to 2, 3-dihydroxypyridine (2,3-DHP) or both to harmless compound. (Jones, 1979).



MIMOSINE 3,4-DHP 2,3 - DHP

Mimosine has structural similarity with amino acid, tyrosine. Toxicity of mimosine may ocur due to inhibition of tyrosine, utilizing enzyme or incorporation of mimosine into biologically vital proteins in place of tyrosine. For example, thyroxin synthesis is hampered by the prevention of the iodination of tyrosine, thus affecting prodution of thyroid hormone.

Toxic Effects :

Mimosine is an antimitotic and depilatory agent and is a potent goitrogen. Alopecia is a common clinical sign in all species of animals, sensitive to mimosine and its metabolites. Besides alopecia, loss of appetite (anorexia), excessive salivation, vomitting, incordinated gait and loss of body weight are other toxic effect due to Leucaena feeding. The enlarged thyroid (thyroid hypertrophy) and low circulating concentrations of thyroid hormones are

observed in all species of animals. The enlargement of pituitary gland was also marked in some cases. Further, many workers (Atreja *et al.*, 1998, D'Mello, 1992, Hammond, 1995 and Reis *et al.*,)reported the tongue uleration, congested buccal cavity, oesophageal ulcers, ear and eye lesions and scaly skin due to mimosine toxicity. The effects on reproduction of animals include reduced calving percentage due to early embryonic mortality or parturition of calves with lower body weight, having nervous signs. In male animals, the sperm mortality are reduced, causing poor reporductive performance. Nephritis and cirrhosis were also revealed in animals fed on diet containing Leucaena. The blood clinical parameters are also affected i.e. low haemoglobin level, packed cell volume (PCV%), total leucocyte count (TLC), T3 and T4 levels and increased Serum glutamic - oxaloacetic transaminase (SGOT) and Serum glutamic pyruvic transaminase (SGPT) activities were observed on feeding of Leucaena hay in different levels. Finally, the toxicity may be acute or chronic and may result in death. However, Leucaena toxicity in goats is not recognized as a problem in Hawaii.

Alleviation of Toxic Effect :

The removal of Leucaena from the diet usually results in relatively rapid and complete recovery. The feeding of Leucaena within tolerance level to animals is advised for using it as unconventional feed resource. It is generally believed that Leucaena can constitute 5 to 10% of diet of non-ruminants and upto 30% of the diet of unadapted ruminants, without signs of toxicity. There have been suggestions that treatment with T4 or iodine and supplementation with L-phenyl alanine and L-tyrosine may alleviate signs of mimosine toxicity. Further, some mineral salts e.g. iron and copper injection and aluminium and zinc supplementations have been tried with little success. The leaching of Leucaena meal with 0.05 N Sodium acetate detoxified 95% of mimosine without loss of any important nutrients. The treatment of heat (dry and moist), cooking, soaking and washing of Leucaena meal and with molasses supplementation were tried with some beneficial effects. It is also possible to avoid mimosine toxicity by conditioning the animals to subabul leaves over a period of time.

The biological inactivtation of mimosine and its metabolic products (3,4-DHP and 2,3-DHP) by ruminal bacteria occur in ruminal fermentatin process. Whereas, this process is limited or varied in different class of ruminants, For example, goats can utilize Leucaena leaves efficiently than other ruminants. Attempts have also been made for isolation and characterization of mimosine/DHP degrading bacteria from rumen of resistant animals to be used in manipulation of rumen microbial environment to facilitate the utilization of Leucaena leaves. The transinoculation of goat rumen liquor into rumen of other ruminants have also been tried for detoxificatin of mimosine/DHP. Moreover, transinoculation of Hawaiian goat rumen liquor to Australian steer fed 100% Leucaena diet, revealed no urinary excretion of DHP in the steers, indicating the involvement of bacteria in DHP degradation in rumen. However, there is no clarity on period of survivability of transinoculated bacterial population in the rumen of receiver animals. But the manipulatin of rumen environment may pose threat to natural environment of rumen by disturbing the original habitat to that particular species. These aspects of microbial detoxification process need

to be tested in different ruminants prior to application in field conditons.

Conclusion :

The demand of feed from unconventional feed resources is an important area to be explored in developing country like India. Further, the good quality pastures and sufficient fodders are essential for our animals to have the better health and productivity. *Leucaena* is represented by a number of plant forms and is most wide spread in many tropical areas in the world. It has been introudced in several states in India due to its high yielding, pest resistant, rapid growing, drought tolerant, palatable and nutritious qualifites. Therefore, further research should be made to include Leucaena leaf meal/seeds in complete feeds (upto 50% on DM basis) without any toxic effet of mimosine or its metabolic products. Furhter, the studies on the testing of animal products for presence of mimosine/ DHP may be carried out for safe human consumption.

References :

Atreja, P.P., Gupta, H.K. and Ghosh, M.K. (1998). *Proceedings of Golden Jubilee National Symposium* held in June 19-20, 1998 at IVRI, Regional Station, Palampur, HP.

D'Mello, J.P.F. (1992). *Anim. Feed Sci. Tech.*, **28**:237-261.

Hammond, A.C. (1995). *J. Anim. Sci.*, **73** :1487-92.

Jones, R.J. (1979). *World Anim. Rev.*, **31** :13-23.

Reis, P.J., Puchala, R., Sahlu, T. and Goetsch, A.L. (1999). *J. Anim. Sci.*, **77** :1224-1229.

"The author himself is the best judge for his performance"

- Gibbon

Unique Programme for Improvement of Animal Health and Productivity Through Eradication of Ecto-parasitism in Deoni Tract

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Ectoparasitic infestation is the main problem causing reduced productivity, reduced weight gain, apart from transmitting of various dreadly haemoprotozoan diseases in domestic animal. Viz. Babesiosis, Thileriosis, Trypanosomiasis, Anaplasmosis and Ehrlichosis. A programme was launched for eradication of ectoparasitic infestations on mass scale in Deoni tract.

A unique programme of mass spraying of animals was undertaken by the clinics team of veterinary college of Udgir in Deoni tract. During the year 2000-2001, a total of ten thousand (10,000) animals were first sprayed with the ectoparasiticide, **butox®**(Intervet India Pvt. Ltd.) and only then the clinical investigations and treatments were carried out. The activity was undertaken in 13 clinical camps in the rural area.

The ecotoparasiticide, (**butox®**) spraying was carried out in domestic animal species like cattle, buffaloes, ovines, canines and equines of all ages. It was observed that the tick infestation was more prevelent in cattle, followed by buffaloes and goats. Predilection sities for ticks were inner-side of thighs, udder, scrotum, axilla, dewlap and ear. The lice infestation was more common in buffaloes and goats, particularly over the neck and shoulder regions. In dogs, flea and mite infestations were predominantly observed.

The programme involved spraying of deltamethrin 1.25%. The ectoparasiticide, **butox®** was diluted at the rate of 2ml per litre of clean water. The solution was sprayed with common hand spray pump, generally used by farmers for crop spraying (16 litre capacity). It was observed that half litre solution was required for spraying of large sized animal and 200 ml solution was required for small animals. Care was taken to spray on entire body surface, excluding eyes, mouth, nostrils and urogenital organs of all animals. With each free spraying activity, all the owners were advised to cary out similar spraying operation in their animal sheds and also suggested for deworming of the animals. A review of the ecotoparasiticide spraying was taken up in each village as a follow up programme through Sarpanch, Developmet officer and Farmers. It was observed that 75% owners followed the sprayig operation in their cattle sheds and 45 % have also carried out dewormig of the animals. 'Zero Ectoparasitism' was reported in feed back surveys by the owners upto a period of two months. No untoward reaction or side effects have been recorded in any case, indicating safety concetration of drug. One of the most interesting feed back information which was not at all included in the follow up survey report, was the increased in the milk yield of lactating animals by ten to fifteen percent as a result of eradication of ectoparasisties. The aforesaid programme was adopted in the light of the Government of Maharashtra policy, etitled, " Sant Gadge Baba Village Sanitary Awareness Programme for Public Health & Hygiene." Under this programme, another village,

Pohregaon, Dist.-Latur where spraying operation was also adopted.

It is concluded that the spraying of ectoparasiticides should be included as a regular activity by the animal owners and should also be strengthened by extension education programmes for improvemet of health and productivity of the animals.

"We congratulate the clinics team of veterinary college, Udgir for initiating this unique programme. Such metriculus and organised programme will go a long way in eradicating and convincing the farmers as well, regarding importance of controlling of parasitic infestations in animals. The reports on similar programme / parameter, conducted elsewhere, will get priority for publication "

- Editor

Evaluation of Fenbendazole (Panacur®) Against *Ascaridia galli* and *Raillietina tetragona* Infestation in Layers

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Introduction :

Different groups of anthelmintics have been used to control parasitic fauna of domestic animals and poultry. Fenbendazole [Methyl 5-(Phenythio)-2-benzimidazole-carbamate] has been shown to be highly effective due to its broad spectrum and good tolerance against nematode and cestode parasites of cattle (Blagbum *et al.,* 1986), sheep (Zimmerman *et al.,* 1988), horses (Slocombe *et al.,* 1983), dogs (Burke & Roberson, 1983), cats (Hamilton *et al.,* 1984) and various laboratory and zoo animals (Lawrence, 1983, Abo-Shehada & Herbert, 1984 and Janssen, 1985). Domestic and game mammals have been dewormed successfully with Fenbendazole (Duwel, 1977), but a very limited data is available on the efficacy of Fenbendazole against nematode and cestode parasites of poultry (Denev *et al.,* 1977 and Enigk *et al.,* 1975). The present .investigation reports the efficacy of Fenbendazole (**Panacur®** from Intervet) in layers naturally infected with *Ascaridia galli* and *Raillietina tetragona.* The data, thus collected, will be helpful for the field veterinarians and poultry farmers to control parasitic infestations.

Materials and Methods :

One hundred White Leghorn layers (52 weeks) were kept in wire-floored pens having polythene sheet bedding. The birds had a previous history of mixed infestation of *A. galli* and *R. tetragona.*

Parasitological Techniques:

The droppings of the birds were examined microscopically for helminth ova by direct and floatation techniques (Soulsby, 1982). The recovered ova were identified using the keys described by Soulsby (1982). For the identification of adult parasites, 10 birds, other than the experimental birds, were sacrificed. Their guts were removed intact, incised and adult worms were collected and identified (Soulsby, 1982).

Experimental Design: The infested layers were randomly divided in four groups (A,B,C & D) of 25 birds each. Fenbendazole (**Panacur®**) was added to the feed at the dose levels of 4, 8 and 16 mg/kg body weight and were allotted to group A, B and C respectively. Group D served as infested untreated control. All the four groups were separately placed in individual pen from the day of medication.

Drug Efficacy : Efficacy of **Panacur®** was evaluated on the basis of reduction in the number of whole worms (Table II & III) and eggs per gram (EPG) of droppings (Table I). Number of whole worms found on gut examination were counted pre-and post-medication upto seven days.

Two birds per day from each group, were selected randomly and sacrificed post-medication. The gastro-intestinal tract was removed intact from gizzard to vent, incised length wise and its contents were submersed in normal saline in a jar. The recovered worms were counted. Eggs per gram (EPG) of dropings were calculated by McMaster's egg counting technique (Soulsby, 1982). EPG was done pre- and post-medication upto 7 days.

Results and Discussion :

Results of eggs per gram (EPG) and per cent reduction in ova of *A. galli* and *R. tetragona* at three dose levels of **Panacur®** are depicted in Table 1. The per cent reduction in EPG at dose

level of 4, 8 and 16 mg/kg body weight was 100 per cent at each dose level on the day 7 of post-medication. There was a highly significant difference (P<0.01) in EPG and per cent reduction at different days of post-medication among the three groups, with dose levels of 4, 8 and 16 mg/kg body weight respectively. However, no significant difference (P>0.01) was noted in per cent reduction with different dose levels of **Panacur®**. As judged by the results, **Panacur®** was 100% effective in eliminating the *A. galli* and *R. tetragona* ova from the medicated layers at dose levels of either 4, 8 and 16 mg/kg body weight. On the day-5 of post-medication, a marked decline in egg counts was noted which reached to peak the day-7 of post-medication. These findings are in accordance with the results of Kovalenko (1986 and 1988) and Lawrence (1983) who documented that Fenbendazole is 100% effective against *Ascaridia, Hetarakis, Raillietina* and *Capillaria spp.* infestation in poultry under field conditions. Reddy & Hafeez (1988) and Cencek *et al.,* (1992) also reported that Fenbendazole was an excellent anthelmintic against *A. galli* and other nematode infestation in poultry.

Per cent reduction of *A. galli* at different dose levels of **Panacur®** is presented in Table II. The per cent reduction of *A. galli* with the dose level of 4, 8 and 16 mg/kg body weight was 93.5%, 100% and 100%, respectively on the day-5 of post-medication. However, on the day-6 of post-medication, complete elimination (100%) of the worms with dose level of 4 mg/kg body weight was also achived. A highly significant difference (P<0.01) was noted in per cent reduction of *A. galli* at various days of post-medication among three groups medicated with dose levels of 4, 8 and 16 mg/kg body weight respectively. There was no significant difference (P<0.01) in per cent reduction of *A. galli* at dose levels of 4, 8 and 16 mg/kg body weight.

The per cent reduction of *R. tetragona* at dose level of 4, 8 and 16 mg/kg body weight was 100% at each dose level on the day-6 and -7 of post-medication (Table III). Results revealed a highly significant difference (P>0.01) in per cent reduction of *R. tetragona* at various days of post-medication among the three groups (A, B, & C), medicated with dose levels of 4, 8 and 16 mg/kg body weight respectively. There was no significant difference (P>0.01) in per cent reduction of *R. tetragona* at dose levels of 4, 8 and 16 mg/kg body weight. Results indicated that **Panacur®** was highly effective (100%) in eliminating adult *A. galli* and *R. tetragona* by either dose level. Similar findings have also been observed by Velichkin *et al.,* (1984), Satyanarayanacharyulu *et al.,* (1985), Berezkina *et al.,* (1986), Yazwinski *et al.,* (1986) and Bagherwal & Nanavati (1990) that Fenbendazole completely eliminated adult *A. galli* and *Capillaria obsignata.*

The results of the present studies are also in line with the findings of Norton *et al.,* (1991); Sander & Schwartz (1994) and Yazwinski *et al.,* (1993) who reported 100% efficacy of Fenbendazole against *A. galli* and *A. dissimilis* in poultry.

During the trials, apparently no adverse effects were seen in birds fed on Fenbendazole medicated feed. The odourless and tasteless of Fenbendazole (**Panacur®**) quality makes it easy for birds to consume the medicated feed without hesitation.

Summary :

Panacur® at three dose levels viz. 4, 8 and 16 mg/kg body weight in White Leghorn layers, naturally infested with *A. galli* and *R. tetragona,* a complete elimination (100%) of the adult *A. galli* and *R. tetragona* were observed on the day-6 of post-medication. No apparent adverse effects were observed in the layers, fed on medicated feed.

Table I. Showing Per cent Control of Mixed Infestation *Ascaridia galli* and *Raillietina tetragona* in Layers with **Panacur®** (Fenbendazole), Based on Reduction in Eggs Per gram (EPG) of Droppings

Group Details	EPG Pre-medication	Post - medication (EPG) and * Per cent Control						
		Days Post - medication						
		1	2	3	4	5	6	7
A	2533•3	2466•6 (2•6)*	1466•0 (42•1)	1200•0 (52•6)	1000•0 (60•5)	200•0 (90•1)	66•6 (97•3)	0 (100)
B	2333•3	2266•6 (2•8)*	1533•3 (34•2)	933•3 (60•0)	733•3 (68•5)	266•6 (88•5)	0 (100)	0 (100)
C	2200•0	2133•3 (3•03)*	1133•3 (48•4)	866 (60•6)	733•3 (66•6)	66•6 (96•9)	0 (100)	0 (100)
D	2533•3	2666•6 (5•2)**	2800•0 (10•5)	3000•0 (18•4)	3200•0 (26•3)	3200•0 (26•3)	3266•6 (28•9)	3400•0 (34•2)

Figures in parenthesis indicate per cent control in treated and per cent increase in number of eggs in untreated control groups.
a = Average number of eggs counted per animal of each group pre-medication.
b = Average number of eggs counted per animal of each group post-medication

$$\text{*Percent control (Group A, B \& C)} = \frac{\text{Average number of eggs pre-medication - Average number of eggs post-medication}}{\text{Average number of eggs pre-medication}} \times 100$$

$$\text{**Percent increase (Infested untreated Group D control)} = \frac{\text{Average number of eggs at indicated day - Average number of eggs pre-medication}}{\text{Average number of eggs pre-medication}} \times 100$$

Table II. Showing Per cent Control of Adult Worms, *Ascaridia galli* in Layers with **Panacur®** (Fenbendazole) at Different Post-medication Days

Group Details	Pre-medication Worm Burden a	Post - medication Worm Burden b Per cent Control						
		Post-medication Days						
		1	2	3	4	5	6	7
A	16•6	16•0 (0•0)*	8•0 (50•0)	3•5 (78•1)	2•0 (87•5)	1•0 (93•5)	0 (100)	0 (100)
B	15•0	14•5 (6•4)*	1•5 (58•0)	1•0 (90•3)	1•0 (93•5)	0 (100)	0 (100)	0 (100)
C	16•0	15•0 (6•2)*	6•0 (62•5)	2•0 (87•5)	1•5 (90•6)	0 (100)	0 (100)	0 (100)
D	17•0	17•0 (0)**	17•0 (0)	17•0 (0)	18•5 (8•8)	21•5 (26•4)	21•5 (26•4)	23•0 (35•2)

Figures in parenthesis indicate per cent control in treated and per cent increase in number of *A. galli* in untreated control groups.
a = Average number of *A. galli* counted per animal of each group pre-medication.
b = Average number of *A. galli* counted per animal of each group post-medication

$$\text{*Percent control (Group A, B \& C)} = \frac{\text{Average number of } A.\ galli \text{ pre-medication - Average number of } A.\ galli \text{ post-medication}}{\text{Average number of } A.\ galli \text{ pre-medication}} \times 100$$

$$\text{**Percent increase (Infested untreated Group D control)} = \frac{\text{Average number of } A.\ galli \text{ at indicated day - Average number of } A.\ galli \text{ pre-medication}}{\text{Average number of } A.\ galli \text{ pre-medication}} \times 100$$

Table III. Showing Per cent Control of Adult Worms, *Railletina tetragona* in Layers with **Panacur®** (Fenbendazole) at Different Post-medication Days

Group Details	Pre-medication Worm Burden a	Post - medication Worm Burden b Per cent of Control*						
		Post- medication Days						
		1	2	3	4	5	6	7
A	9•0	8•0 (5•5)*	5•5 (38•8)	3•5 (61•6)	2•0 (77•7)	2•0 (77•7)	0 (100)	0 (100)
B	11•5	9•0 (18•1)*	7•0 (36•3)	4•0 (63•6)	2•5 (77•2)	1•0 (90•0)	0 (100)	0 (100)
C	8•5	15•0 (6•2)*	6•5 (23•5)	3•5 (58•8)	3•5 (58•5)	2•0 (76•4)	0 (100)	0 (100)
D	15•0	15•0 (0)**	15•0 (0)	17•0 (13•3)	18•5 (23•3)	18•5 (23•3	21•5 (40•0)	23•0 (53•3)

Figures in parenthesis indicate per cent control in treated and per cent increase in number of *R. tetragona* in untreated control groups.
a = Average number of *R. tetragona* counted per animal of each group pre-medication.
b = Average number of *R. tetragona* counted per animal of each group post-medication

$$\text{*Percent control (Group A, B \& C)} = \frac{\text{Average number of } R.\ tetragona \text{ pre-medication} - \text{Average number of } R.\ tetragona \text{ post-medication}}{\text{Average number of } R.\ tetragona \text{ pre-medication}} \times 100$$

$$\text{**Percent increase (Infested untreated Group D control)} = \frac{\text{Average number of } R.\ tetragona \text{ at indicated day} - \text{Average number of } R.\ tetragona \text{ pre-medication}}{\text{Average number of } R.\ tetragona \text{ pre-medication}} \times 100$$

References :

Abo-Shehada, M.N. and Herbert, I.V. (1984). *Res. Vet. Sci.,* **36**: 87-91.

Bagherwal, R.K. and Nanavati, S. (1990). *Poult. Advisor,* **23**: 33-36.

Berezkina, S.V., Malakhov A.V., Mamerzhanov S.I., Daugalieva E.kh., Smironv A.G., Belousov M.N. and Volkova G.N. (1986). *Bjulleten Vsesoyu'yiogo Instituta Gel Mintolooigii im K.L Skryabina.,* **42**: 17-179.

Blagbum, B.L., Hanrahan, L.A. Hendrix, C.M. and Linday, D.S. (1986). *Amer. Vet. Res.,* **47**: 534-536.

Burke, T.M. and Roberson, E.L. (1983). *J. Amer. Vet. Med. Assoc.,* **183**:987-990.

Cencek, T., Ziomko, T. Euczumska, E. and Tonczyk, G. (1992). *Medycyna Wetey Nafyifia.,* **48**: 421-423.

Denev, I., Kostov, R and Vasilev, I. (1977). *Veterinama Sbirka.,* **75**: 29-31.

Duwel, D., (1977). *Blue Book,* **27**: 237-251.

Enigk, K., Batke,J and Dey-Hazra. (1975). *Tierae. Umsch.,* **30**:324-329.

Hamilton, J.M., Weatherley, A and Chapman, A.J. (1984). *Vet. Rec.,* **114**: 40-41.

Janssen, D.L. (1985) J. *Amer. Vet. Med. Assoc.,* **187**: 1189-1190.

Kovalenko, I.I. (1988). *Veterinarya.,* **63**: 55-57.

Kovalenko, I.I. (1986). *Veterinarya.,* **11**: 42-43.

Lawrence, L., (1983). *Vet. Rec.,* **112**: 433-435.

Norton, R.A., Yazwinski, T.A. and Johnson, Z. (1991). *Poult. Sci.,* **70**: 1835-1837.

Reddy, M.R and Hafeez, M. (1988). *Cheiron,* **17**: 64-67.

Sander, P.E. and Schwartz, R.D. (1994). *Avi. Dis.,* **38**: 350-353.

Satyanarayanacharyulu, N., Hafeez, M and Muralidharam, S.R.G. (19850. *Poult. Advisor,* **18**: 69-73.

Slocombe, E.J.L. (1982). Soulsby (1982) *The English Language Book Society and Bailliere Tindall,* London.

Velichkin, P.A., Golubkov, V.F and Soloyanov, V.V. (1984). *Materialy Nauchnoi-Konferentsij Vsesnyaznogo Obshchestva Gel mintologov Biologiya-I-taksonomiya gelmintov zhivotnykhi Cheloveka.,* **34**: 104-109.

Yazwinski, T.A., Andrew P., Holtzen H., Presson R., N. Wood and 2. Johnson. (1986). *Avi. Dis.,* **30**: 716-718.

Yazwinski, T.A., Rosenstein, M. Schwartz, R.D. Wilson, K andJohnson. (1993). *Avi. Pathol.,* **22**: 177-181.

Zimmerman, G.L., Hoberg, E.P. Richard, L.G. and Bishop, J-K. (1988). *Amer. J. Vet. Res.,* **49**: 2094-2095.

"Seldom can a heart be lonely, if it seeks one lonelier still"

- Frances Ridley Havergal

"The one permanent emotion of the inferior man is fear, fear of the unknown, the complex, inexplicable. What he wants beyond everything else is safety."

- Napoleon

"Have a zest for living. Go places and do things."

- Alden James

"The great end of life is not knowledge but action"

- Thomas Huxley

Isolation of FMD Virus Type 'O' from Pigs with Heavy Mortality

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Introduction :

Foot and mouth disease (FMD) is endemic in the North Eastern (NE) states of India. The disease was observed almost throughout the year and in different species of animals. Out of four types of FMD virus, reported from the disease in the NE states in the last decades, virus type 'O' was most predominant and found to be involved in 81% of the FMD outbreaks. The present communication reports outbreak of FMD due to virus type 'O', causing heavy mortality in piglets of two organized pig farms in Guwahati, Assam.

Materials and Methods :

Epithelia from the feet-lesions of pigs showing the symptoms of FMD were collected in phosphate buffer saline (PBS) and glycerol (50/50 v/v) and brought to the laboratory.Pieces of heart muscles were also collected in PBS with glycerel from the piglets which died during the course of the disease. The samples were used for isolation and identification of FMD virus.

A 10% suspension of samples was prepared separately by grinding the samples with a pestle and mortar in sterile sand and PBS. The mixture was centrifuged (REMI) at 5000 rpm for 15 minutes and the supernatant was collected as antigen for detection and isolation of FMD virus.

A double sandwich ELISA (Crowther & Abu Elzein, 1979) was performed in 96 well microtitre ELISA plates (Nunc) with slight modification to detect FMD virus type. The reference anti-FMD virus type specific sera against 0,A,C and Asia-1, raised in rabbit and guineapig were received from the central FMD virus typing laboratory, Mukteswar and used as coating and tracing sera respectively.

Isolation of FMD virus from the samples was done in primary pig kidney cell mono-layer. Each of the antigen was passed through Millipore sterile 0.22 /μm filter (Millex-GV) before inoculating into the cell-culture flask.

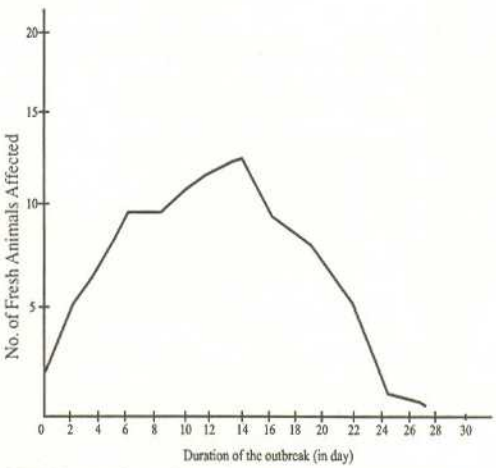

Fig-1 Epidemic Curve of FMD Outbreak in Network Project Pigs farm

Results and Discussion :

Outbreaks of FMD in two organized pig farms were studied.The number of pigs of different types, affected during the course of the outbreaks and the epidemic curves of the two outbreaks, are presented in figures 1 and 2 respectively.

Out of 252 pigs of different categories in the Network project and pigs of the college of veterinary science, 183(72.6%) were affected and 102(94.4%) piglets died within a period of 27 days, from January 12, 1999.

Two pregnant sows were aborted and two still-births were also recorded from an affected

sow during the outbreak. The affected pigs were local and hampshire cross.

Out of 165 pigs of different types in the Base pig breeding farm, 121 (73.32%) were affected and all 57 (100%) piglets died within 17 days, from February 16, 1999. None of the adult pigs, however, died during the period of the outbreak (Table). The pigs were mostly large black, saddle back and hampshire cross. None of the pigs of both farms had the history of FMD vaccination before onset of the disease.

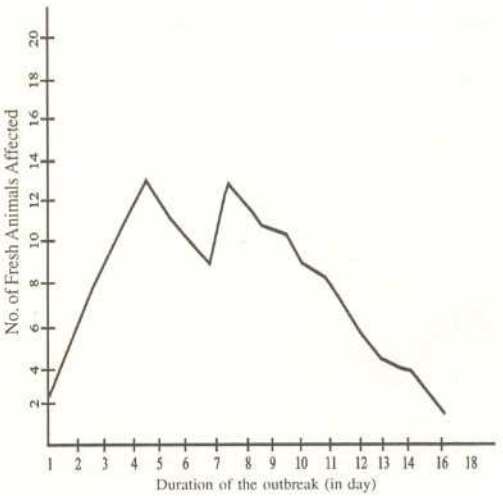

Fig-2 Epidemic Curve of FMD Outbreak in Base Pig Breeding Farm

Clinically, the affected adult pigs of both farms showed lameness and severe feet lesions. The piglets died suddenly without typical symptoms and lesions of FMD. Post-mortem of some of the dead piglets revealed haemorrhagic lesions on myocardium.

The feet epithelial and heart muscle samples from both the farms were found positive for BAD virus type 'O' by ELISA. Virus type was confirmed by the central FMD virus typing laboratory, Mukteswar. Virus type could also be isolated from the samples in primary pig kidney cell culture.

The possible source of infection of the outbreak in the college farm was identified to be the straw, brought from a cattle farm which was used as bedding material for the pregnant sows. The source of infection in the base pig breeding farm was suspected to be human beings.

Outbreaks of FMD in pigs have been reported earlier (Sarma *et al.*, 1988), but an outbreak causing such a high mortality of piglet is a concern. Proper use of available FMD vaccine for pigs may be beneficial to combat such infection.

Table : Showing Number of Pigs Affected and Mortality Due to FMD Outbreak in the two Organised Farms

Types of Pig	Network Project Breeding Farm		Base Pig Breeding Farm	
	Affected	Mortality	Affected	Mortality
Sow	44	Nil	36	Nil
Boar	17	Nil	8	Nil
Gilt	14	Nil	20	Nil
Piglets	108	102	57	57

Acknowledgements :

The authors thank the authority of the college of veterinary science and the Director, A.H. & Veterinary for providing necessary facilities. The financial assistance received from the ICAR, New Delhi and necessary reagents from the Central FMD Virus Typing Laboratory, Mukteswar are thankfully acknowledged.

References :

Crowther, J.R. and Abu Elzein, EME (1979). *J.Hyg. Camb.*, **83** : 513-519.

Sarma, D.K., Barman N.N., Das, S.K., Hazarika, A.K. and Sarma K. (1988). *Virus Information Exchange Newsletter.*, **5**:102.

Effect of Fertagyl®,Gonadotropin Releasing Hormone (GnRH), Administration on Conception Rate in Repeat Breeding Cows

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Introduction :

Repeat breding cow is one that has normal or nearly normal oestrous cycle and oestrus period and has been bred thrice or more times to a fertile bull, yet failed to conceive (Robert, 1971). Repeat breeding syndrome (RBS) is one of the frustrating gynaecological maladies of crossbred animals, leading to infertility. There are different etiological factors, responsible for the RBS and delayed ovulation is one of the major contributing factors for RBS. In view of lower conception rate, in crossbred cows, suffering from RBS with ovulatory dysfunction, the present study was undertaken to observe the effect of **Fertagyl®**(Intervet India Pvt. Ltd.), gonadotropin releasing hormone (GnRH) administration on conception rate in repeat breeding cows.

Materials and Methods :

The present study was carried out at Tandulwadi Centre of Shivamrut Dudh Utapadak Sangh, Akluj, Taluka-Malshiras, District-Solapur. Cows were maintained under standard feeding and manàgemental conditions. The animals were stall-fed with fodder and concentrates, twice daily. They were also fed with paragrass and sugarcane tops as greens and kadbi as roughages and provided with plenty of water. These cows were hand-milked twice daily(morning and evening).Total twenty (20) crossbred cows (Holstein-Friesian) with regular oestrus cycle (interval of 21 days) and suffering from RBS with ovulatory dysfunction were selected. They were screened by rectal palpation for any uterine anatomical, abnormalities, adhesions etc. and cows with no indication of uterine infection(cervical mucous of all these cows were critically for pus or flakes) were selected.

Experimental Design: Twenty repeat breeder cows as mentioned above were found to be in oestrus and presented for artificial insemination were divided into two groups. In the treatment group (n=10), cows were injected with 2.5 ml **Fertagyl®** intra-muscularly as a single dose at the time of artificial insemination. In the control group, cows were inseminated at oestrus without any treatment.

Cows in oestrus, were detected by visual observations. Oestrus was confirmed by gynaeco-clinical examination and graffian follicles were palpated on one of the ovaries.

Artificial Insemination: Cows in both groups were inseminated at oestrus as per standard AM/PM rule. Generally, cows observed in oestrus in the morning were inseminated in the evening and cows observed in oestrus in the afternoon were inseminated in the morning of the following day. All inseminations were done with frozen thawed semen. Frozen semen straws, thawed at 37°C for 30 seconds. Semen was deposited at the mid-cervix by recto-vaginal method.

Results and Discussion :

In the treatment group, seven cows were pregnant out of ten cows. The conception rate for the treatment group was 70 %. In the control group, four cows were pregnant out of the ten cows. The conception rate for the control group was 40 %. The conception rate in treatment group was boosted by 30 % than control group.

The present findings are in accordance with Rayos (1995) who reported 70 % and 50% conception rate in treatment and control group, respectively. Similar type of results i.e. increase in conception rate by 20-30 % were obtained by Prokofev *et al.*, (1987), Ataman *et al.*, (1998), Vamerzani *et al.*, (1999) and Sonwane *et al.*, (2001). Roy *et al.*, (1995) reported significant increase in conception rate by 40.3 % (73.6% *vs.* 33.3%) when GnRH was administrated at the onset of heat.

Iyer & Sreekumaran (1992) observed 70% conception rate in crossbred, suffering from ovulatory dysfunction, when GnRH is administrated at the time of insemination. Increase in a conception rate by 10-20 % were obtained by Westhuysen & Van Der (1981), Bhosrekar *et al.*, (1986) and Ras *et al.*, (1994).

The improved conception rate in the treatment group may be due to beneficial effect of **Fertagyl®** (GnRH) in regulating the time of ovulation in cows and thus, contributed to higher conception rate. On the basis of the observations of this limited study, it may be concluded that **Fertagyl®** (GnRH) administration resulted in higher conception rate in the treatment group as against the control group of animals.

References:

Ataman, M.B, Aksoy, M.,Kaya, A., Aral, F., Yildiz, C. and Akoz, M.(1998). *Hayvancilik-Arastirma-Dergisi.*, **8(1)**:1-4.

Bhosrekar, M.R., Inamdar, A.J., Joshi, B.M., Phadnis, Y.P., Lokhande, S.M. and Mangurkar, B.R. (1986). *Ind. Vet. J.*, **63(10)**:833-837.

Iyer, C.P.N. and Sreekumaran, T. (1992). *Ind. J. Anim. Reprod.*, **13(1)**:88-89.

Prokofev, M.I., Chernykh, V., Mezina, M.N., Bespalova, Zh.D., Saks, T.R., Krivosheev. O.G. and Syutkin, E.A.(1987). *Anim. Breed. Abstr.*, **55(11)** : 6855.

Ras, A., Glazier, T., Wozniak, Z., Studzinski, T., Zdunczyk, S. and Janowski, T. (1994). *Anim.Breed. Abstr.*, **62(1)**:160.

Rayos, A.A.(1995). *Philippine J. Vet. Med.*, **32(1)**:10-13.

Robert (1971). Veterinary Obstetrics and Genital Diseases. *Scientific Book Agency*, Calcutta, India.

Roy, G.P., Akhtar, M.H., Singh, A.P., Prasad, K.M., and Singh, R.B.(1995). *Ind. J. Anim. reprod.*, **16(2)**:131.

Sonwane,N.S., Dhoble, R.L., Sawale, A.G., Suryawanshi, S.T., Dherange, N.P. and Wale, V.R. (2001). *The Blue Cross Book*, **16** : 43-44.

Vamerzani, A.A., Dubey, D.M. and Arneja, D.V.(1999). *Inter.J.Anim. Sci.*, **14** : 113-116.

Westhuysen, J.M. and Van Der (1981). *Anim. Breed. Abstr.*, **49(6)**:3302.

"There is no greater cause of melancholy then Idleness"

- Burton

Case Report : Pyoderma in a Marathwadi Buffalo

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Dermatitis may be infectious or non-infectious type. Infectious dermatitis may be of bacterial origin (Chakrabarti, 1994). The present paper deals with the sucessful treatment of pyoderma in a buffalo.

History and Clinical Examination :

A seven year old Marathwadi buffalo was presented to the clinics of veterinary college, Udgir with the history of formation of small pustules over hip, thigh and flank region, followed by itching which resulted in formation of extensive wounds at the site.

Clinical examination revealed normal physiological parameters. There was mucopurulent discharge at the site of self-inflicted wounds. Superficial layer of skin i.e. epidermis was lost.

Diagnosis and Treatment :

Pus sample from the site was collected for culture and antibiotic sensitivity test. The sample was found sensitive to enrofloxacin (++++), gentamycin (+++) and chloramaphenicol (++). Hence, the animal was treated with **Floxidin®** (enrofloxacin from Intervet India Pvt. Ltd.), 15 ml i.m. for 7 days, **Avil®** (Pheniramine maleate from Intervet India Pvt. Ltd.), 10 ml i.m. for 5 days and diclofenac sodium, 12 ml i.m. for 3 days. The wounds were regularly cleaned with hydrogen peroxide and dressed with antiseptic powder (Zinc oxide 2 part + Boric acid 2 part + Iodoform 1 part) for 12 days. Animal recovered completely on the 13th post-treatment day.

Fig. : Showing Pyoderma in a Buffalo

Discussion :

The culture and microscopic examination of the pus revealed the presence of lactose fermenting Gram- ve bacilli. The organisms were confirmed to be *Escherichia coli* (Merchant & Packer, 1983) by employing a battery of biochemical tests (Barrow & Felthan, 1997).

The antibiogram of the isolate was studied using various antibiotic sensitivity discs. The *E.coli* found to be highly sensitive to **Floxidin®**(enrofloxacin). The present findings are supported by the observations of Khatpe *et.al.*, (1997).

References :

Barrow, G.I. and Felthan, R.KA. (1997). Cowan and Steel's manual for the Identification of Medical Bacteria **3rd Edn.,** *Cambridge Univ. Press,* London.

Chakrabarti, A (1994). Textbook of Clinical Veterinary Medicine, *Kalyani Publishers,* Kolkata.

Khatpe, D.S., Datta, A.K. and Singh, S.N. (1997). *The Blue Cross Book,* **9** : 15-16.

Merchant, IA. and Packer, RA. (1983). Verterinary Bacteriology and Virology, **7th Edn.** *CBS Publishers and Distributors,* Delhi, PP: 273 - 277.

Case Report : Bovine Conjoined Twins

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Anomalous twins or duplication has always stimulated layman's curiosity. These anomalous twins form a graded series from slight duplication to virtually separate individuals. It may be classified as free or attached and symmetrically or asymmetrically attached twins (Potter, 1961). Conjoined twins or double monsters are monozygotic twins, imperfectly separated and are considered to have the same mode of origin as the identical twins.

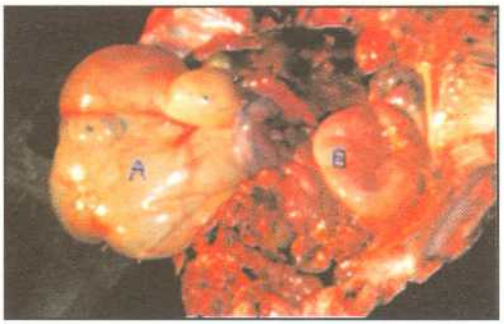

Fig. 1 : A Fully Developed Fore-stomach with Attached Spleen (A) and a Rudimentory Fore-stomach (B).

The paper describes two cases of buffaloes, which were in second lactation and completed their gestation period that were presented with the history of dystocia to the veterinary hospital, CCSHAU, Hisar, Haryana. Pervaginal examination of these cases revealed presence of double monster and caesarian section was performed to remove the foetus.

Observations :

In first case, the latero-ventrally attached co-twin calf had double head and neck, a common trunk, four fore-limbs, three hind-limbs, double tails, absence of anus, single vagina and common vertebral column with deformed pelvic region. The facial developments in both the heads were normal and movement of various joints appeared apparently normal externally. On opening, the body thoracic cavity revealed presence of thirteen pairs of ribs, a pair of heart

Fig.2 : Large Liver Showing Two Gall Bladders.

in separate pericardial sacs, a pair of lungs with conjoint trachea just before the entrance of lungs and absence of diaphragm also observed. There was also double oesophagus which open into two separate rumen. The abdominal cavity comprised of two rumen, one of which was five times larger than the other with a single spleen attached to the larger rumen (Fig.1). In addition, there were two pairs of kidneys, large liver with

Fig.3 : Dicephalus Dipus Tetrabrachius Conjoined Twin.

two gall bladders (Fig.2), and two small intestinal loops, connected to single caecum and colon.

In the second case, there was ventro-ventral attachment of two foetues from base of the neck up to pelvis (Fig.3). The conjoined twins had two heads, neck, body with two pairs of fore-limbs and only one pair of hind-limb. The monster also showed minute rudimentary anal opening under each tail, two scrotal sacs without testicles and a rudimentary penis. The monster had two separate vertebral columns and thoracic cavities with a common abdominal cavity and a pelvic region. The thoracic cavities consisted of a pair of lungs but a single abnormal shaped heart with an appearance of a mass of flesh at the junction of two cavities. Incision of heart revealed thickened ventricular wall with reduced ventricular chamber. In the abdominal cavity, there was presence of single rumen, spleen, liver, small intestine and colon.

Discussion :

The two conjoined twin under the present study, fall under Dicephalus dipygus Tetrabrachius category as reported by Roberts (1976) in his classification of cojoined twins.

In both cases, the monsters have revealed, associated defects of duplication of some of the thoracic and abdominal organs. Similar associated defects in cow conjoined twins have also been reported by Pandey (1987).

Double monstrosities have been reported to occur most commonly in bovine, sow, bitch, cat and rare in other species of animals (Roberts, 1976). Hamcock (1962) and Arthur (1956) reported that this condition is very rare and occur once in 100,000 bovine births.

According to Smith *et al.*, (1996), there may be any degree of duplication; two separate and perfect twins or two twins that are perfectly formed but joined together by more or less duplicated tissue, such as abdomen to abdomen, back to back or lateral attachment. In such cases, there may be duplication of almost any part of the animal's body as observed in the present cases. Double pairs of fore and hind-limbs can also occur; the latter are common, (Smith *et al.*, 1996), contrary to this duplication of fore-limbs observed in the present report.

Potter (1961) stated that the embryonic duplication has been considered to be free monozygotic or dizygotic twins or triplets and conjoined twins. It was further described that in dipygus twins the component parts are symmetrical and arises from a single ovum and are monozygotic. At present, definitive etiological knowledge of embryonic duplication is scarce. Whether genetic or environmental factors or both, is not known. Hamilton *et al.*, (1962) reported that many of these developmental abnormalities could not be interpreted in terms of induced abnormalities. Though, Arey (1954) held the view that mutations of sex cells were responsible for the same. Many authors considered that duplication of parts is due to incomplete separation of blastomeres of a single fertilized egg.

References :

Arey, L. D. (1954). Developmental Anatomy, *W.B. Saunders Company,* London.

Arthur, G. H. (1956). *Vet. Rec.,* **68 :** 389.

Hamcock, J. (1954). Monozygotic Twins in Cattle, In Advances in Genetics, *Academic Press, inc.,* NVC.

Hamilton, W. J., Boyd, J. D. and Mossman, H.W. (1962). Human Embryolgy, *W. Heiffer and Sons Ltd.,* Cambridge, U.K.

Pandey, G.S. and Shandomo, M.N. (1989). *Ind. Vet. J.,*: 65.

Smith, H. A., Jones, T. C. and Hunt, R. D. (1996). Veterinary Pathology **6th Edn.** *Lea and Febiger,* Philadelphia, : 86 -88.

Potter, E. L. (1961). Pathology of the Foetus and Infant, **2nd Edn.** *Year Book Medical Publishers Inc.*, Chicago.

"Man can climb to the highest summits but he cannot dwell there long"

- George Bernard Shaw

Case Report : Successful Treatment of *Babesia equi* Infection in a Stallion

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Some case records of equine piroplasmosis are available in India (Gautam & Dwivedi, 1976; Kalra *et al.*, 1987 and Bhikane *et al.*, 2001). The present paper reports a case of *Babesia equi*. infection in a stallion.

History and Clinical Examination :

A ten months old stallion was brought to the college clinic with the history of discharging red urine and loose bile stained faeces at frequent intervals, since 24 hours. The animal was anorectic and showing severe signs of colic. History further revealed that animal had consumed immature jawar plants and was treated for lameness of left hind-limb with dexamethasone, day before onset of illness.

Examination of physiological parameters revealed, rectal temperature 101°F, heart rate 48/minute and respiratory rate 20/ minute. The eye mucous membranes appeared brownish in colour.

Examination of blood revealed, Hb-9.2 gm%, PCV-23% and TLC-16.3 $x10^3\mu l$. Differential leucocyte count showed, Neutrophils-68%, Lymphocytes -25%, Eosinophils -4% and Monocytes -3%. The plasma was red coloured. Urine sample was brownish in colour and positive for haemoglobin, glucose, bile salts and proteins. Faecal examination showed presence of strongyle eggs. Blood plasma and urine samples were negative for nitrates/nitrites with diphenylamine blue test. Blood smears stained with Giemsa, indicated *Babesia equi* infection. Depending upon above observations the case was diagnosed as babesiosis.

Treatment :

The animal was treated with oxytetracycline 20 ml i.v., Distilled Normal Saline (DNS)-2 litre i.v., Vitamin (B_1+B_6+B_{12}) injection 5ml i.m. and dicyclomine HCl 15ml i.m. Next day, improvement in appetite and water intake was observed and urine appeared dark yellow. The same treatment, except dicyclomine HCl was repeated for another 2 days. Animal recovered completely on the 3rd day of treatment.

Discussion :

Equine babesiosis due to *B.equi* is characterised by haemoglobinuria, fever, anaemia and icterus in peracute cases (Hungerford, 1975). However, Jubb *et al.*, (1985) are of the view that haemoglobinuria is unusual in *B.equi* infection. In present case, haemoglobinuria and restlessness was observed. However, body temperature was normal, probably due to prior treatment of animal with **Novalgin®** (Intervet India Pvt. Ltd.) and dicycloimine HCl. The passage of loose faeces may be atrributed to ingestion of young jawar plants leading to indigestion. Haematological examination revealed slightly lower Hb and PCV values owing to intra-vascular haemolysis. Similar findings were earlier reported by Bhikane *et al.*, (2001), that of presence of haemolysis and renal damage. Blood smear examination showed presence of *B.equi*

infection and diagnosis was confirmed.

The case was successfully treated with oxytetracycline, B-complex and fluid therapy for three days. Radostits *et al.*, (1994) reported that the drugs like **Berenil®** (Diminazene aceturate), imidocarb, buparavaquine and oxytetracycline may be tried in equine babesiosis.

References :

Bhikane, A.U.; Anantwwar, L.G.; Narladkar, B.W.; Yadav, G.U. and Aher, V.D. (2001). *Ind. Vet.J.*, **78** : 247-248.

Gautam, O.P. and Diwivedi, S.K. (1976). *Ind. Vet.J.*, **54** : 546.

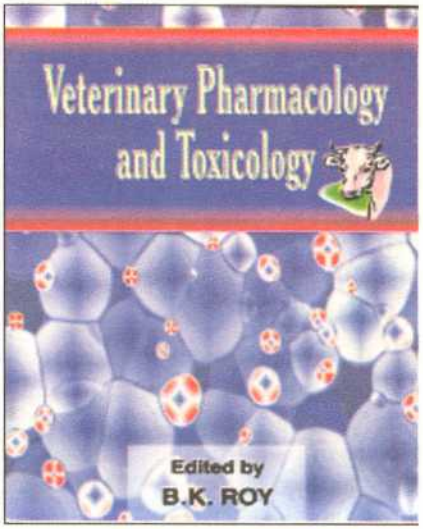
Hungerford, T.G. (1975). Diseases of Livestock, **8th Edn.** *MC Grath Hill Book Co.* Sydney.

Jubb. K.V.F., Kennedy, P.C. and Palmer, M. (1985). Pathology of Domestic Animals, **3rd Edn.** Vol-I *Academic Press*, New York.

Kalra, I.S. Randhwa, S.N.S. and Galhotra, A.P. (1987). *Ind. Vet.J.*, **64** : 516.

Radostis, O.M., Blood, D.C. and Gray, C.C. (1994). Veterinary Medicine, **8th Edn.** *ELBS, Bailliere Tinwall,* London.

BOOK REVIEW



"Veterinary Pharmacology and Toxicology"
Edited by B.K. Roy
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Published by *Kalyani Publishers*
BI-1292, Rajinder Nagar, Ludhiana-141 008

Price : Rs. 250/-

This book has been edited with update information on veterinary pharmacology & toxicology and will serve as text book for undergraduates in accordance with the new syllabus of veterinary pharmacology & toxicology, adopted by Veterinary Council of India (VCI).

The editor has incorporated the topics, written by the specialists of those fields in India. In-fact, the best material is extracted from the rich experiences of the leading veterinary pharmacologists in India. This book will be of great value to the field practicing veterinarians as a ready reckoner for prescribing suitable drugs to the patients.

The editor, B.K. Roy, has maintained the standard of format of presentation and the illustrations and tables are suitably placed. The chapter on indigenous drugs is the unique feature of this book. The information is very specific and presented in nutshell. Toxicology subject is also well presented and has the update information. This will be helpful to practicing veterinarians.

We are sure, this book of Veterinary Pharmacolgy and Toxicology will serve as text book for veterinary colleges and reference book for field veterinarian s. It is requested, detailed discussion on Homoepathy medicine in veterinary practice may be added when the revision of this book will be done.

Reviewed by : Dr. S. Jagdish, Editorial Board Member, ***'The Blue Cross Book'***

"Attention makes the genius : all learning, fancy, sincere and skill depend upon it"

- Wilmott

Case Report : Radial Nerve Paralysis in a Bullock

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Radial nerve is the largest brach of branchial plexus. Radial nerve paralysis is more commonly seen in horse and rarely inn cattle. (Veugopalan, 1994). A case of radial nerve paralysis in a non-descript bullock is reported here.

Case History :

An eleven year old non-descript bullock was presented for treatment during Village Clinics at handargulli Latur District, with history of inability of bearing body weight since 3 days. History further revealed that the animal was cast and operated for horn cancer in right lateral recumbancy. After the operation, animal was unable to bear the body weight on right fore-limb and preferred recumbency. Further, animal was facing difficulty while standing (Fig.) and was reluctant to walk.

Clinical examination revealed, all the parameters were in normal range. The affected right limb was longer than normal and the elbow joint of the limb appeared to be flexed and dropped from it's normal location. Depending on the above history and clinical examination, the case was diagnosed as radial nerve paralysis.

Treatment :

The case was treated with Vitamin ($B_1 + B_6 + B_{12}$) injection at the dose rate of 5ml i.m. daily and hot fomentation twice daily for 7 days. Injection Diclofenac sodium (1mg/Kg body weight i.m.) was given for 3 days. The improvement was slow and upto the extent of 25% by the end of the 1st week. On the 8th day, instead of hot fomentation, infra-red therapy was started. Within 5 days of infra-red therapy, the animal started bearing weight on the affected limb and the complete recovery occurred in 3 weeks time after the initiation of treatment.

Discussion :

Radial nerve paralysis may be caused due to injury to nerve accompanying fracture of first rib or humerus, over stretching of nerve and casting of animal on the hard ground. (O'Connor, 1984 and Tyagi & singh, 1996). In the present case, the animal was cast on the hard ground for performing amputation of horn. This might have been led to compression of nerve between shoulder and thorax while casting on the hard ground, resulting in radial nerve paralysis.

In the present case, the affected limb was longer than normal and elbow was flexed and dropped from its normal location, probably due to paralysis of triceps muscles as also reported by Venugopalan (1994).

Fig. Showing Inability of the Animal to Stand on the Right Foot

The animal was successfully treated with Vitamin (B_1+B_6+B_{12}) and infra-red therapy. The recovery period was 3 weeks. It is interesting to note that the improvement was rapid after initiation of infra-red therapy. This is an agreement with Venugopalan (1994) who advised infra-red therapy for the treatment of radial nerve paralysis as infra-red therapy causes heating of deeper tissues and dilatation of blood vessels.

Looking to this type of complication, it is advisable to perform amputation of the animal in standing position. If casting is essential then soft bedding should be provided on the floor, so as to avoid radial nerve paralysis.

References :

O'Connor, J.J.(1980). Dollar's Veterinary Surgery **1st Edn.,** *CBS Publishers and Distributors,* Delhi, PP: 810 - 811.

Tyagi, R.P.S. and Singh, J. (1996). Ruminant Surgery. *CBS Publishers and Distributors,* Delhi, PP : 380 - 390.

Venugopalan, A.(1994). Essentials of Veterinary Surgery. *Oxford and IBH Publishing Co. Pvt. Ltd.,* Bombay, PP : 208.

Case Report : Post-partum Uterine Prolapse in Madras Red Sheep

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Prolapse of uterus has been reported as a common post-partum complication in ruminants (Roberts, 1971 and Arthur *et al.*, 1989). In India, many cases of uterine prolapse were recorded in cattle and goats (Rajasekaran *et al.*, 1993. Mishra *et al.*, 1997 and Singh *et al.*, 1998).

But only very few incidences were reported in sheep (Wani *et al.*, 2000). The present report places on record of a case of total uterine prolapse in sheep.

History and Clinical Examination :

A four-year old Madras red ewe, from sheep section of this station, delivered a normal live lamb after a prolonged period of straining. The foetal membranes were expelled immediately, following parturition with complete eversion of the uterus simultaneously. When the case was presented, the ewe was found to be in a state of recumbency and the prolapsed portion was slightly edematous, congested and contaminated with soil.

Treatment :

The prolapsed mass and the surrounding perineal region was washed with warm saline solution. The animal was restrained by administering 3ml of 2% Lignocaine hydrochloride epidurally. The hind quarters of the ewe was kept raised by attendant and the prolapsed mass was lubricated and replaced with gentle pressure using the palm of both hands. To ensure complete replacement, about five litres of clean warm water was delivered into the uterus by gravity and siphoned out immediately as described by Arthur *et al.*, (1989). A pair of retention sutures were applied for a temporary vulval closure. The animal was administered with 300ml of 5 % dextrose saline and 10 units of oxyteracycline (250mg, intra-muscularly) was continued for five days. Retention sutures were removed after 48 hours as against 7days recorded by Wani *et al.*, (2000) and the non-recurrence of the condition ensured. Thus, 48 hours of vulval closure may be enough if straining was not evident normally in the subsequent breeding season.

References :

Arthur, G.H.M Noakes, D. E. and Pearson, H.(1989). Veterinary Reproduction and Obstetrics (Theriogenology) **6th Edn.,** *ELBS.*, London.

Mishra, U.K. Agrawal, R.G. and Pandit R.K. (1997). *Ind. J. Anim. Reprod.*, **18(2)**: 124–126.

Rajasekharan, J., Balasubramanian, S and Asokan, S.A. (1993). *Ind. J. Anim. Reprod.*, **14(2)**:126.

Roberts, S.J. (1971). Veterinary Obstetrics and Genital Diseases. **2nd Edn.,** *CBS publication,* Delhi.

Singh, P.,Prabhakar, S and Nanda, A.S. (1998). *Ind. J. Anim,Reprod.*, **19(2)**: 161 – 162.

Wani, N.A., Wani, G.M. and Khan, M.Z. (2000). *Ind. J. Anim. Reprod.*, **21(1)**: 80.

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Field Trial on the Efficacy of Anthelmintics Against Amphistome Infestation of Cattle in a Rain-fed District of Orissa

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Introduction :

Gastro-intestinal parasitism causes enormous direct and indirect losses in livestock. These effects are more pronounced in Indian sub-continent having humid and tropical climate (Bhattacharya, 2000). Administration of anthelmintics is one of the standard approaches to combat this problem. Efficacy of various anthelmintics in field conditions have been reported by number of workers (Chandrasekharan *et al.*, 1978, Padmanaban *et al.*, 1984, Sahoo & Mishra, 1987 and Mohapatra *et al.*, 1990). The present study is designed to compare the efficacy of oxyclozanide (**Tolzan®-F** from Intervet India Pvt. Ltd.), albendazole and closantel under agro-climatic condition, prevailing in a rain-fed district of Orissa.

Materials and Methods :

The study was carried out in villages of Dhenkanal, a rain-fed district of Orissa. Thirty cattle of either sex, having natural infestation of amphistome were randomly selected and divided into 3 equal groups. Animals of group-I, II and III were administered once orally with oxyclozanide (**Tolzan®-F**), albendazole and closantel suspension at the dose rate of 10, 15 and 15 mg/kg body weight respectively. The faecal samples were examined pre-treatment and 3rd,7th,15th and 30th day post-treatment to estimate eggs per gram (EPG) by Stoll's technique (Stoll, 1923). The efficacy of the drugs were assessed on the basis of reduction in faecal egg count, disappearance of clinical symptoms and exhibition of adverse reactions, if any. The efficacy of the drug was calculated using the following formula -

$$\% \text{ Efficacy} = \frac{\text{Pre-treatment EPG} - \text{Post-treatment EPG}}{\text{Pre-treatment EPG}} \times 100$$

Results and Discussion :

The efficacy of anthelmistics against amphistome infestation has been depicted in the table.

The mean pre-treatment EPG count was recorded to be 490, 370 and 450 in group - I, II and III respectively. Oxyclozanide (**Tolzan®-F**) treatment reduced the EPG count to 300, 80, 70 and 40 on 3rd,7th,15th and 30th day post-treatment respectively, indicating an efficacy of 91.83%. The efficacy of the drug closantel on the 30th day post-treatment was calculated to be 75.56%. This corroborates the observation made by Rolfe & Boray (1987) and Manna *et al.*, (1994).

Rolfe & Boray (1987) and Sukhapensa *et al.*, (1991) opined that closantel was effective against paramphistom species. However, the result in this trial revealed 75% efficacy in closantel treated animals. This variation in efficacy may be attributed to difference in dose rate and route of administration. The reduction of faecal egg count was found to be 40.5%, 45.9%, 59.4% and 64.8% on 3rd, 7th, 15th and 30th day post-treatment respectively in animals treated with albendazole. Courteney *et al.*,

Table : Efficacy of Anthelminitics Against Amphistome Infestation in Cattle.

Sl. No.	Type of Anthelmintics used	Dose of Anthel-minitics mg/kg.B W	Mean E P G					Efficacy in percentage (%)
			EPG: Pre-treatment	EPG : Post-treatment in days				
				3rd	7th	15th	30th	
1.	**Tolzan®-F** (Oxyclozanide)	10	490	300 (38.77)	80 83.67)	70 (85.71)	40 (91.83)	91.83
2.	Albendazole	15	370	220 (40.54)	200 (45.95)	10 (59.45)	130 (64.86)	64.86
3.	Closantel	15	450	360 (20.00)	300 (33.33)	190 (58.00)	110 (75.56)	75.56

N.B. : Figure in parenthesis indicates percentage ; BW: Body Weight

(1984) and Mohapatra *et al.*, (1990) reported higher degree of efficacy in animals, treated with albendazole. The variation in efficacy might be co-related with period and number of animals included in the study. By the 7th day post-treatment, maximum number of eggs were eliminated in the animals treated with **Tolzan®-F**, oxyclozanide (Table). All the three drugs were found to be well tolerated by the animals.

Summary :

In cases of natural infestation of amphistomes in cattle, highest percentage (91.8%) of efficacy was recorded in oxyclosanide (**Tolzan®-F**) treated group, followed by closantel (75.5%) and albendazole (64.8%) at the dose rate of 10, 15 and 15 mg/kg body weight respectively.

Keeping in view, the percentage of efficacy and clinical cure, oxyclozandide (**Tolzan®-F**) is considered to be the drug of choice for the treatment of amphistomes infestation in cattle.

References :

Bhattacharya, A.K. (2000). *The Blue Cross Book,* **15** : 7-9.

Chandrasekharan, K. Sathianesa, V. Pythan, C. and Sundram, R.K. (1978), *Kerala J. Vet. Sci.*, **9** : 67.

Courteney, C.H. Searer, J.K. and Whitten, R.D. (1984). *Modern Vet. Pract.*, **65** : 845.

Manna, A.K., Pramanik, S. and Mukharjee, G.S., (1994). *Ind. J. Anim. Health,* **33** : 27 - 27.

Mohapatra, P.K. Misra, S.C., Panda, M.R. and Rao, A.T. (1990). *Ind. Vet. J.*, **67** : 756-759.

Padmanaban, V.D., Krishnappa, K. and Rahumathulla, P.S. (1984). *Ind. Vet. J.*, **61** : 509.

Rolfe, P.F. and Boray, J.C. (1987). *Australian Vet. J.*, **64** : 328 - 332.

Sahoo, P. and Misra, S.C. (1987). *Ind. Vet. J.*, **64** : 970.

Stoll, N.R., (1923), cited by Soulsby, E.J.L. (1982). Helminths, Arthropods and Protozoa of domesticated animals, **8th Edn**. *Bailliere Tindall and Casell Limited*, London.

Sukhapensa, V. Tuntasuvan, D. and suriyajantratong, W.P. (1991). *Thailand J., Vet. Sc.Med.*, **21** : 165-171.

Determination of Safety of Hog Cholera Vaccine (Porcilis®CSF Live) for Pigs Under Field Condition

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Hog cholera or classical swine fever (CSF) is one of the most feared and devastating disease of pigs. The disease is enzootic in the North Eastern States of India and has been reported by several workers (Murthy & Hazarika, 1982, Das *et al.*, 1983; Gosh *et al.*, 1988, Sarma & Sarma, 1998). Regular vaccination is the most effective way to prevent the occurance of the disease. Safety aspect on post-vaccination is also an important part of succesful immunization programme. Hence, the present study was undertaken to observe safety (14 day study) in relation to mortality and abortion or any other systemic reactions post-vaccination with **Porcilis®CSF** live (Intervet India Pvt. Ltd.).

Materials and Methods :

Selection of areas : The Bumfor and Topatoli villages under Dimoria block, Kamrup district were selected for this trial. In these two villages, 90% inhabitants are of Bore tribes and their source of income is pig farming.

Pigs : A total of 125 pigs of dirrerent age groups from these villages were selected for this trial. Most of the pigs were cross breed (local x hampshire, local x Yorkshire, local x largeblack). For convenience, pigs were divided into five groups (A, B, C, D & E) for the vaccination trial (Table). The selected animals had no history of vaccination against hog cholera for the last six months.

Table: Summary of Pigs of Different Groups Included for the Safety Trial

Groups/ Farm	Number of Pigs of Different Age Groups Vaccinated						Total animals
	Piglets (2-4 months)	Grower 5-12 months		M	Adult Above 1 Year		
		M	F		F		
					NP	P	
A	9	3	5	2	3	3[a]	25
B	6	4	9	1	4	1	25
C	5	3	10	2	5	-	25
D	6	1	5	3	7	3[a]	25
E	4	3	6	4	3	5	25
Total	30	14	35	12	22	12	125

M - Male, F - Female; NP - Non Pregnant, P - Pregnant;
a-1 sow of each group farrowed withing 14 days of vaccination

Vaccine : The hog cholera vaccine (**Porcilis®CSF** live vaccine, Intervet India Pvt. Ltd. Batch No. 11146), was used for the trial. The freeze dried vaccine was reconstituted with the 10 ml diluent, received along with the vaccine vial at the time of vaccination. The cold-chain was maintained during transportation of the vaccine and at the time of vaccination.

Vaccination : Vaccination was done by the intra-muscular route on the right side at the base of the ear using standard equipment. The dose of 1 ml of the reconsituted vaccine was given to each of the animal, irrespective of age.

Observations :

The vaccinated animals were observed during the first day after vacination and daily upto 14 days after the vaccination for any systemic reactions, death and abortion etc.

Results and Discussion :

None of the vaccinated animals showed any sign of systemic reaction and no death of the vaccinated animals was recorded during the observation period. Out of the 12 pregnant sows, including in the vaccination trials, none of the pregnant sows aborted and two of the sows farrowed healthy piglets within the observation period (Table). The results of this trial showed that vaccine is safe for pigs at different age groups, reared under field conditions.

References :

Murthy, P.S.R.C. and Hazarika, G.C., (1982). *J. Res. A.A.U.*, **3:** 56-59.

Das P., Ghosh, S.S., Dutta, M., Sonowal, D.K., Mehta, S.N. and Borthakur, D.N., (1983). Resources Inventory, Kohima District (Nagaland) ICAR Res. Complex for N.E. Hill Region, Shillong.

Sarma, P.C. and Sarma, D.K. (1998). *Ind. J. Virol.*, **14:** 41-43.

"Starting out to make money is the greatest mistake in life. Do what you feel you have a flair for doing, and if you are good enough at it,money will come"

- Sir William Rootes

"No matter what ails you. Work, faithfully. Work is the greatest remedy available for both mental and physical afflictions"

- James M. Cowan

"Put purpose in your life. Take the tools at hand and carve your own best life."

- Dr. Frank Caprio

Effect of Peripartum Hormone Treatment on Piglet Weight at Birth and Weaning

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Introduction :

Piglet weight at weaning is of utmost importance due to its immediate economic bearing to the farmers, With the application of hormone therapy for desired time of farrowing, it is imperative to determine its effect on piglet weight at birth and at weaning as well. The present experiment was undertaken to study the effect of $PGF_2\alpha$ and/or oxytocin treatment at peripartum on weight of piglet at birth and weaning.

Materials and Methods:

Study was conducted on Tamworth x Desi, Tamworth and Large White Yorkshire (LWY) breed of sows, maintained at pig breeding farm of Ranchi veterinary college. One hundred twenty sows, due for parturition belonging to different genotype age and parities, were randomly allotted to six experimental groups, each having twenty animals.

Group I (n=20) : Sows of this group were injected with 5mg (1ml) of $PGF_2\alpha$, i.m. route on day-111.

Group II (n=20) : Sows received 5mg (1ml) of $PGF_2\alpha$, i.m. route after the birth of first piglet.

Group III (n=20) : Animals were injected with sterile normal saline solution (NSS) on day-111 along with of 5mg (1ml) of $PGF_2\alpha$, i.m. route after the birth of first piglet.

Group IV (n=20) Animals received sterile NSS on day-111 along with 20 1U oxytocin, i.m. route after the birth of first piglet.

Group V (n=20) : Animals were injected with sterile NSS through the same route at two occasion i.e. 1ml on day-111 and after the birth of first piglet (4ml).

Group VI (n=20) Animals were injected with 1ml of sterile NSS through the same route.

Both group V and group VI were kept as control.

Piglets in each group were weaned either on day-48 or day-56 and their body weight were recorded at fortnightly interval.

Results:

Piglet weight ranged between 0.99 ± 0.018 to 1.04 ± 0.022 kg in different treatment and control groups (Table 1) at the time of birth. In general, the body weight was higher in treatment groups than the control groups of piglets from day-14 to day-56 of age. Numerically, the highest body weight at all the ages was observed in group III than those of group II, followed by group I and IV in the treatment groups. The two control groups exhibited lower body weight at all the ages, day-42 when compared to other four treated groups. On the day-56, when piglets were weaned, higher body weight was observed in group III (8.34 ± 0.294kg) which did not differ significantly from group II (8.04 ± 0.278kg) and group I (8.02 ± 0.197kg) On the other hand, significantly($P<0.05$) low body weight was recorded on the day-56 for piglets, weaned at day-48 in control group V (6.95 ± 0.165kg) which did not

Table I : Average Body Weight (kg) of Piglets at Different Ages in Various Treatment Groups of Sows

Treated Groups	Post-treatment Days						
	Day-0	Day-14	Day-28	Day-42	Day-48	Day-56	
						W-D-48	W-D-58
I	1.02 ± 0.016 (152)	2.51 ± 0.045 (144)	4.22 ± 0.073 (136)	5.85 ± 0.117 (133)	6.69 ± 0.112 (133)	7.19 ± 0.218 (68)	8.02 ± 0.197 (65)
II	1.04 ± 0.022 (156)	2.57 ± 0.047 (146)	4.34 ± 0.091 (140)	6.06 ± 0.142 (137)	6.88 ± 0.162 (136)	7.33 ± 0.231 (65)	8.04 ± 0.278 (71)
III	1.03 ± 0.019 (151)	2.64 ± 0.044 (138)	4.44 ± 0.090 (135)	6.11 ± 0.156 (132)	7.17 ± 0.174 (131)	7.46 ± 0.213 (64)	8.34 ± 0.294 (67)
IV	1.02 ± 0.018 (154)	2.67 ± 0.062 (140)	4.18 ± 0.100 (135)	5.48 ± 0.184 (134)	6.51 ± 0.132 (133)	7.14 ± 0.197 (68)	7.40 ± 0.250 (65)
V	0.99 ± 0.018 (146)	2.38 ± 0.055 (132)	3.87 ± 0.080 (227)	5.54 ± 0.110 (118)	6.37 ± 0.122 (117)	6.95 ± 0.165 (58)	7.37 ± 0191 (59)
VI	1.02 ± 0.015 (148)	2.54 ± 0.050 (132)	3.97 ± 0.091 (122)	5.41 ± 0.134 (115)	6.24 ± 0.157 (115)	7.05 ± 0.227 (54)	7.31 ± 0.193 (58)

Figures in parentheses are number of observations. Means under the same superscript did not differ significantly.

Table II : Analysis of Variance Showing the Effect of Treatment on Body Weight at Different Ages in Piglets

Sources of variation	Day-0		Day-14		Day-28		Day-42		Day-48		Day-56	
	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.	d.f.	M.S.
Between treatment	5	0.01^{NS}	5	1.52*	5	7.02*	5	11.80*	5	14.68*	11	12.15*
Within treatment	901	0.05	826	0.36	789	1.03	763	2.74	759	2.69	750	3.30

* P<0.01; NS - Not significant

differ significantly from treated group IV (7.14±0.917 kg), group I (7.19±0.218kg), group II (7.33±0.231 kg) and group III (7.46±0.213 kg). Further, the piglets weaned on day-48 had comparatively lower body weight on the day-56 in comparison to their counterpart piglets, weaned on the day-56 in all the treated and control groups. Statistical analysis revealed that these differences among treated groups I, II and III were not significant, whereas the treatment group IV and control group V and VI did not differ significantly from their herd mates, weaned at day-56. Analysis of variance Table II showed significant effect of treatment on weight at all the ages under study, except at birth.

Discussion :

Piglet birth weight and weight at weaning of exotic breed was higher than desi and desi exotic crosses (Ray *et al.*, 2001); Mishra et.al. (1985); Singh *et al.*, (1989); Mishra *et al.*, (1990); Mishra & Sharma (1980); Mukhopadhyay *et al.*, (1992) and Pandey *et al.*, (1996). The body weight of piglet of different genetic groups of sows observed during this study, find support from the work of Garcia *et al.*, (1989) and Ascher & Trainturier (1994). Sharma & Singh (1993) and Pandey *et al.*, (1996) also observed that birth weight varied with breed and parity. Average birth weight of piglets has been reported to decrease with increasing litter size (Klaver & Hartog, 1989 and Mishra *et al.*, (1989).

Summary :

The piglet weight at birth did not reveal any significant difference between treated and control groups. However, significantly ($P<0.01$) higher piglet weight was recorded at weaning in all the treated groups in comparison to control.

Acknowledgments :

The first author is thankful to the Director, Animal Husbandry, Bihar, Patna for granting study leave and to the Dean, Ranchi Veterinary College, Ranchi for providing necessary facilities for the present study.

References :

Ascher, F. and Tainturier (1994). *Proc. 13th Int. Congr.Prig Vet. Soc,*. Bangkok, Thailand, 376.

Garcia, S.K.; Barbosa, A.S. and Camargoes,M. (1989). *Colegio Brasileiro de Reproducao Animal* : 143-148.

Klaver, J. and Hartog, L.A. Den (1989). *Revue de L' Agriculture,* **42 (3)** : 461-467.

Mishra, M. Dash, P. and Acharaya, S. (1985). *Ind. J. Anim. Prod. mgmt.*, **1(1)** : 41-44.

Mishra. R.R. and Sharma, G.C. (1980). *Ind. Vet. J.*, **67(5)** : 425-429.

Mishra, R.R., Lal, K. and Prasad, S. (1990). *Ind. J. Anim. Res.*, **24**:34-39

Mishra, R.R., Sharma, G.C; Prasad, S. and Lal, K. (1989). *Ind. Vet. J.*, **66** : 1027-1030.

Mukhopadhyay, A., Singh, R.L. and Singh, S.K. (1992). *Ind. J. Anim, Sci.*, **62 (5)** : 482-484.

Padney, R.N. , Singh,S.K.; Singh., R.L.and Dubey, C.B. (1996). *Ind. J. Anim. Sci.*, **66(2)** : 198-200.

Ray, S.K.H., Sinha, A.K. and Singh, Balraj,(2001). *Ind. J. Anim. Sci.*, **71(1)** : 19-21.

Sharma, B.D. and Singh, S.K. (1993). *Ind. J. Anim. Sci.*, **63(2)** : 208-211.

Singh, B.K., Singh, B.K. and Dubey, C.B. (1989). *Ind. Vet. J.*, **66(4)** : 322-328.

NEWS :

Dr. Md. Hafeez : The New President, IAAVP (The Indian Association for the Advancement of Veterinary Parasitology)

Dr. Md. Hafeez, Organizing Secretary, Professor and University Head, Department of Parasitology and Associate Dean, College of Veterinary Science, Tirupati was unanimously elected as President of "The Indian Association for the Advancement of Veterinary Parasitology" (IAAVP) for the next three-year term. Dr. Md. Hafeez, had earlier worked in IAAVP committees as Executive member, Joint-secretary and Vice-president. He is also on the Editorial Board of '*The Journal of Veterinary Parisitology*' and he had successfully conducted the recently concluded three day XII National Congress of Veterinary Parasitology at the College of Veterinary Science, Tirupati.

Dr. Md. Hafeez had published more than 125 research papers and 50 popular articles. He attended several International / Asian / National Congress of Veterinary Sciences. Dr. Md. Hafeez, has been awarded number of times for his outstanding contribution in veterinary parasitology and other field as well.

We expect, Dr. Hafeez, as new dynamic leader of IAAVP, will bring some new hopes on veterinary development in the forth coming IAAVP conference to be held at Kolkata this year, 2002.

Dr. Md. Hafeez
President, The Indian Association for the Advancement of Veterinary Parasitology

NEWS :

Dr. A.T. Sherikar
Vice-chancellor, Maharashtra Animal & Fishery Sciences University, Nagpur, MS

Dr. A.T. Sherikar : The First Vice-chancellor of Maharashtra Animal & Fishery Sciences University, Nagpur, MS

Dr. A.T. Sherikar an illustrious alumnus of the Bombay Veterinary College, has been appointed as the first Vice-chancellor of the Maharashtra Animal & Fishery Sciences University, Nagpur. Government notification to this effect was issued on 17th November 2000. Certainly, he is the most deserving candidate for the post.

Dr. A.T. Sherikar obtained his graduate and post-graduate degree from Bombay Veterinary College. Prior to elevation, he was the Head, Department of Food Hygiene & Public Health at Bombay Veterinary College, Parel, Mumbai.

He has handled a number of research projects and has distinction of being a person who brought maximum research funds due solely to his personal credibility as scientist. He has been awarded several national awards and is known as a hard working, down to earth person. We all hope that under his leadership, the new university will progress leaps and bounds.

ABSTRACTS :

1. **Parasite Induced Apoptosis of Host Cells and its Potential Implications in Immune Evasion**

   Lin Chen and Kalyansundaram Ramaswamy (2001).*J. Vet.Parasitol.,* **15(1):** 1-12.

   Apoptosis induces typical fragmentation of DNA and minimal tissue response, unlike as in necrosis. Apoptosis is due to binding of ligands to death receptors (five types recognized), which are expressed on all cell types in response to stress stumuli. Binding of ligands with death receptors triggers certain cystine proteases leading to slow but systematic proteolytic degradation of variety of proteins involved in cell repair, cell cycle, signal transduction and structural integrity. Several pathogens, including bacteria, viruses and parasites potentially these receptors to induce apoptosis in host immune cells as survival strategy. Host can also induce apoptosis of parasite cells.

   Authors have reviewed extensive literature on apoptosis in different parasitic diseases . They conclude that in parasite induced apoptosis, TH_1 type CD_4+ cells, which secrete IL-2 and IFN-gamma lymphokines, are more susceptible than TH_2 type cells. This selective destruction of TH_1 cells enables parasites to evade host immune responses , since TH_1 mediated CM_1 plays major role in defence against many parasites.

   Authors further state that identification of putative antigens of parasites that may have proapoptotic functions and further effectively neutralizing these antigens may be helpful in complimenting development of vaccine and chemotherapy against parasites.

2. **Phytase Supplementation in Poultry Feed**

   Ramarao.S.V. and Ramasubba Reddy. S. (2001). *Poultry International,* **40(10) :** 46-52.

   Phytase supplementation reduces incorporation of inorganic phosphorous in broiler and layer diets, improves utilization of proteins, fats, and carbohydrates, increases availability of calcium and trace minerals. It also makes poultry farming eco-friendly since it reduces phosphorous content in droppings. Phytase is more effective in diets containing low levels of calcium.

3. **New Viruses Pose Risk to Human Health**

   The Times of India (Dated, 03/11/2001), **Mumbai Edn. :** P7.

   Human infections with those viruses, which were once confined to animal hosts, are increasing and nearly 29 such diseases have appeared since 1973 all around the world.

   In India, recent cases (in year 2000) of deaths in Siliguri are suspected to be caused by Nepah or Hendra virus (Belonging to measles group) which generally use pigs and bats as hosts. West –nile fever (a mosquito borne virus disease) was detected in Mumbai during 1952 and again in 1954. Kyasnur forest disease, Ganjam virus, Bhanja virus, Hantaan virus, Ebola, Rift valley fever have been detected in humans in different parts of India .

ABSTRACTS :

4. Biotin for High Producing Dairy Cows

Ole Lund.Svendsen (2000). *Feed International,* **21(11):** 25-34.

Research on prevention of hoof disorders (a costly health problem next to mastitis and poor fertility in cows) and elevation of milk production in dairy cows has lead to the importance of biotin supplementation in feed for high producing dairy cows.

Based on trial results, a long term supplementation of 20 mg of biotin / animal/day for cows and 10 to 20 mg/ animal/day for heifers (starting from 15 month age) is recommended for improved hoof-health and performance.

5. Focus on Feed .... Worry list

Clayton Gill (2000). *Feed International,* **21(11):** 4-5.

FAO regional conference for Europe, held in Porto (Portugal) in 2000, deliberated on the problem "Food Safety and Quality (as affected by animal) & Feed Stuff" and came out with a list of items which are associated with public health risks. This "Worry list" of FAO includes the following :-

1) Mycotoxin residues in meat, milk and eggs (particularly potential carcinogens Viz. Afla toxin B_1 and M_1 and Ochratoxin A)
2) Veterinary drugs (antibiotic growth promoters)
3) Chemical residues in meat milk and eggs (pesticides, fungicides polychlorinated biphenyles, dioxins, heavy metals, mercury, lead and cadmium)
4) Infective agents reaching man via animal feed (*Salmonella* sp., *Bacillus anthracis, Toxoplasma* sp., *Trichinella* sp., and BSE).
5) Genetically modified plants (there is public concern although harmful effects not proved as yet.)

This list is a challenge to animal feed industry.

6. Vitamin E and Selenium for Fighting Stress in Equines

Pagan, J. and Rompala, R. (2001). *Feed International,* **22(2):** 30-34.

Dr. Joe Pagan of Kentucky Equine Research and Dr. Ronald Rompala, Nutrition Director of Blue Seal Feeds, USA, suggest that exercised Arabian and Cross bred horses may need vitamin E and selenium in higher quantity than that suggested in NRC recommendations since the latter are based on idle horses

Dr. Rompala further states that in addition to extra doses of vitamin E and selenium, zinc, copper, manganese and iron in chelated forms and vitamin C are important to minimise metabolic corrosion in animals and thereby improve their performance.

Compiled by :
Dr. V.S.Narsapur and Dr. A. K. Datta
Editorial Board Members
The Blue Cross Book

Comments / Suggestion on *'The Blue Cross Book'* - 17 and Expected Articles for *'The Blue Cross Book'* - 19

1. **Dr. Bhageerathi Pugashetti**
   M.R.S. Dairy Unit, University of Agricultural Sciences, Dharwad-580 005
   "This issue has more information regarding clinical activities. Hope to receive some more like this. I would like to send an article entitled, Efficacy of Livoma in HFX Deoni Cross Bred Calves."

2. **Dr. Uma Shanker**
   Principal Scientist, IVRI, C-99, Rajendra Nagar, Avas Vikas Colony, Bareilly- 243 122
   "Polythene Engorgement in Cattle – An Emerging Problem , is really informative article and we should follow the preventive measures discussed there in."

3. **Dr. M.V.G. Ahobala Rao**
   Manager (Training Centre), GDMPMAC Union Ltd., Sangam Dairy, Dist.- Guntur, Vadlamudi-522 213, AP
   "Polythene Engorgement in Cattle – An Emerging Problem, is very timely and serious topic. A special mention on the use of synthetic disposable dinning table cloths, cups, spoons, tooth picks and forks, need extra attention. The Government should ban usage of such plastic materials in dinners, marriages and other functions. Broken spoons, forks and tooth picks in the garbage, pierce the stomach and intestines of animals and create horrible pain and sometimes deaths in animals. SPCA should arrange posters and banners in every community and function halls to make people aware of cruelty to animals with the usage of plastic materials."

4. **Dr. H.U. Malik**
   Head, Division of Veterinary Clinical Medicine, Faculty of Veterinary (SKUAST), ALSTENG, P.O. Box No. 135, GPO, Srinagar, Kashmir-190 001
   "The journal has attractive get up and useful content. The scope of the journal would be increased, if it is abstracted by CABI. A regular review article, preferably invited, will be a good attraction."

5. **Dr. Chitta Ranjan Bapuli**
   Joint Director, ARD, 1, Kedar, Chatterjee Lane, Behala, Kolkata-700 034, WB
   "Thank you for mailing ***'The Blue Cross Book'-17***. In my opinions the best article is 'classical swine fever virus – Its Survival and Inactivation'. Thanks to Dr. A.K. Datta, Editor, for his sincere contribution. I want to send an article entitled, Rabies and its Zoonotic importance."

6. **Dr. Prabir Kumar Mitra**
   38, Satyen Ghosh Lane, P.O. Chandannagar, Dt. Hoogly-712136, W B
   "Yes, Intervet's research makes the difference "

7. **Dr. M.R. Fazili**
C/o Syed Abdul Hamid, R/o Basantbagh Payeen, Srinagar, Kashmir-190001

"Thanks for publishing my article, 'Polythene Engorgement in Cattle-An emerging problem'. Under sub-heading of Pathogenesis, (in line no. 19) – the word 'rumen' should have been 'caecum'. Thus, one should read, - In a rare case, Sarkate (1997) recovered 26 kg of plastic materials from the caecum of a cow."

8. **Dr. R.N. Kohli**
922, Sector A, Pocket B/C, Vasant kunj, New Delhi-110070

"The articles were excellent including a case report by M.T. Nassef on the Cerebral Hernia in a Newly Born Calf, which was of particular interest because we recently published few such cases in 1998 (*Vet. Rec.*, **142**:145; and *Aust. Vet. J.*, **76**(4)). I liked your journal also because, you publish good coloured pictures whenever necessary. I shall soon be sending a case report on- Ventricular Septal Abscess. Later on, I shall also send a paper on - Ingestion of Plastic Materials by Ruminants."

9. **Dr. Surendra Narayan Mishra**
C/o Veterinary House, B-8, Vikas Bazar, Opp. Bus Stand, Purnea, Bihar

"Really, it is great pleasure for me to read the issue of ***'The Blue Cross Book'-17.*** I liked the clinical article 'Improvement of Pregnancy Rate with Progesterone Primes GnRH Therapy in Post-partum Anoestrus Buffaloes during Spring'."

10. **Dr. K.R. Panicker**
Karunyam, P.O. Thiruvampadi , Allepey, Kerala

"The 'Quotes' are very much appreciated and are of valuable information and record."

11. **Dr. Shatrughn Singh**
Veterinary Assistant Surgeon, District Veterinary Hospital, Raigarh-496 001
" The article on the Evaluation of **Panacur®**-SC 2.5% as an Anthelmintic with Selenium and Cobalt in Lactating Buffaloes and Buffalo-calves, is excellent. Please publish, treatment and prevention of 'DCS' (Dower Cow Syndrome) in the next issue."

12. **Dr. R.N. Dhore**
Associate Professor and Head, Department of Animal Nutrition, Post-graduate Veterinary College, Akola-444 104, M S

"Being the product of Nagpur Veterinary College, I am proud and felt honoured in reading the article on Nagpur Veterinary College. I liked also the article entitled, Polythene Engorgement in Cattle – An Emerging Problem, of today's concerned."

13. **Dr. D.N. Yogi**
Retd. Veterinary Assistant Surgeon, Dhamtari, Raipur-493 773, M P

"I would like to suggest you that more clinical cases related to 'Mastitis' in cross-bred cows should be published"

READERS' COLUMN

14. **Dr. S.K. Bhargava**
1/541, Aravli Vihar, Alwar-301 001, Rajasthan
"The article on the Efficacy of **Berenil® vet 7% RTU** (Ready to Use) in Cases of Some Blood Protozoan Disease really is good. Table showing details of clinical symptoms and haemotological examination of dogs/livestock and therapeutic results of **Berenil®** Injection, is very useful information for veterinarians."

15. **Dr. Vijai Kumar Sinha**
Head, Department of Preventive Medicine, A-60, Indirapuri Colony, P.O. Bihar Veterinary College, Patna-800 014
"The articles published are informative, particularly for the field veterinarians. Photographs showing cerebral hernia in newly born calf are clear, and well arranged. I shall send an article entitled, Foreign Bodies Syndrome in Canine."

16. **Dr. Sharad Arora**
3/352, Bariyon Ki Ghati, Moli Chohatta, Udaipur-313 001, Rajasthan
"I go through your journal regularly. I found it very useful. Kindly send me this journal regularly. Clinical articles, contained in it, are very useful."

17. **Dr. M. Mazhar Ali Khan**
Assistant Director (AH), Cuddapah-516 001, AP
"Majority of the articles and case reports are bound to increase the technical know-how of the veterinarians. My congratulations to the Editorial Board Members."

18. **Dr. B.P. Shukla**
Assistant Professor (Surgery), MHOW Veterinary College, H-14, Veterinary College Campus, MHOW-453 446, MP
"Very useful journal with attractive cover page. Soon I will be sending article, based on my Ph.D research work."

19. **Dr. S.K. Tiwari**
Assistant Professor & In-charge, Department of Surgery & Radiology, College of Veterinary Science & AH, Anjora, P.O. Box - 6, Durg - 491 001, C G
"This issue is containing excellent articles of interest. I hope it will evoke good response amongst the readers and contributors. I shall soon submit one article entitled, Abscess at Peri-udder Region in a Buffalo and its Surgical Management."

20. **Dr. R.P. Singh**
Veterinary Officer, District Veterinary Hospital, Near Sapna Cinema Hall, Shivganj, ARA-802 301
"Thanks for publishing an important article, Polythene Engorgement in Cattle – An Emerging problem, other articles and case reports are also informative. Please send me issue No. 16, which I have not received. ***'The Blue Cross Book'*** should be published quarterly."

READERS' COLUMN

21. **Dr. S.K. Sirmour**
In-charge, Block Extension Team, Kanker Danida, R.E.S. Colony, Kanker, Bastar, District Kanker, CG

"Lot of thanks for sending the issue No. 17. It is an excellent and highly informtive book for the veterinarian. I will be sending an article on, The Efficacy on **Receptal®** in Anoestrus Cross-bred Heifers. Please send me next issue regularly in my new address."

22. **Dr. H.R. Parsani**
Department of Parasitology, Veterinary College, Gujarat Agricultural University, Sardar Krishinagar-385506, Gujarat

"Many thanks for sending the issue of the ***'The Blue Cross Book'***-17. It is very informative and provide latest information regarding field conditions and is excellent compilation of articles which can be path showing to field veterinarian regarding new product like **Panacur® SC 2.5%, Berenil® vet 7% RTU, Ibrivax®, Clovax®** and **butox®** for animal health and production. I will be sending an article entitled Chemotherapy of Nematodiosis in 200 Pigeon within a Short Period."

23. **Dr. L. Kantharaj**
Veterinary Officer, Veterinary Hospital, III Block, Rajajinagar, Bangalore-560 010, Karnataka

"Article on the Synchronization of Heat in Anestrous Bovines, I feel author can emphasize more on ovarian and uterine condition, when animals were treated with **Iliren®**. Publish here details on usage of **Iliren®** for different reproductive disorders.

24. **Prof. Dr. K.A. Doraisamy**
42-5/71, E-1, P.G. Nagar, Jagi Ammapalayam, Salem - 636 302

"The article entitled, Efficacy of **Berenil®** in Bovine Protozoan Dermatitis by Mani with information on seasonal incidence, is very impressive. The details of blood picture on the therapeutic efficacy of **Berenil® vet 7% RTU** by Dash & Datta is more informative."

25. **Dr. Vikas Sharma**
106/25, Kabirmarg, Agarwal Farm, Mansarower, Jaipur-302020, Rajasthan

"I liked this issue very much, it contain highly informative as well as practical articles. I shall send an article entitled, Oriental Sore – A Zoonotic Disease."

26. **Dr. C.B. Mishra**
Senior Veterinary Officer, Veterinary Hospital and A I Centre, Singhwara , Dist -Dharhanga, Bihar

"Most of the articles, published in the 17th issue, are very informative and useful for field veterinarians. **Floxidin®** Injection in the treatment of Adipsia in cattle requires more trials by the senior veterinarians. Few more surgical tips should be published for field veterinarians in every issue."

27. **Dr. Shiv Prasad**
Associate Professor, Gynaecology & Obstetrics, Department of Animal Reproduction, Gynaecology & Obstetrics, C.V.S.C., Pantnagar-263145

"Article written by Dr. Mujeeb-Ur-Rehman Fazili on the Polythene Engorgement in Cattle – An Emerging Problem, is very relevant to the present time. It is causing several maladies in animals especially in towns and cities. It will help in awakening the masses and well encourage the people, not to use polythene bags for the safety of animal well being and preservation of environment in its original vigour so that it may be inherited in its natural gesture to future generations."

28. **Dr. Bharat B. Patel**
Veterinary Hospital, P.O. Umalla, Zaghadia, Bharuch-393120, Gujarat

"I am very happy in getting '***The Blue Cross Book***' it gives good knowledge about your company product. I suggest that some medical medicine also to be discussed in '***The Blue Cross Book.***"

29. **Dr. M. Manovah Selvashekar**
Assistant Director (Library), 41/31A, West Wing, 4th Floor, Imperial Court Apartments, Cunningham Road, Bangalore-560 051, Karnataka

"I have been going through '***The Blue Cross Book***' whenever I have had the opportunity. It is now getting the shape of a true scientific journal. The articles are of field importance and very helpful to field veterinarians. The article on the Treatment of Ectoparasitic Infestation in Dogs with Deltamethrin is brief and useful. Please note, whether the animal has to be given a bath after application has not been mentioned (Issue No. 17). Further, I would be too glad to receive a personal copy of the book regularly at the above mentioned address."

30. **Dr. S.V. Naidu**
Veterinary Assistant Surgeon, Veterinary Hospital, Narayanaguda, Hyderabad, AP

"This is with reference to the article under News and Abstracts column, published in ***'The Blue Cross Book'***-17 issue on the Floxidin Injection in the Treatment of Adipsia in Cattle by T. Umakanthan.

At the outset big thank to Dr. T. Umakanthan for the above mentioned article and no doubt, his observation on adipsia symptoms will be helpful to the veterinarians. Here this is to add further that this symptom, as per my observation, is also found in the condition where the ductus is involved. Ductus incisvus is located on either side of papilla incisva and again the same is located between the dental plate and the first ridge of the hard palet. Ductus incisvus is a small opening where nothing will enter into it normally. Due to increase in the size of the ductus incisvus due to inflammation where it can be found, air bubbles coming our from the ductus incisvus when the animal exales, and slight sounds i.e., rales like are heard in severe cases, this is not found in normal animals. When the animal dips its mouth in water to drink, slight quantity of water will also enter into ductus incisvus, this in turn will

enter into sinuses and respiratory tract which is unbearable to the animal. The animal will try to send out the water that has entered the respiratory track by sneezing and severe shaking of the head. The animal will be scared to drink water further. If untreated, this inflammation of ductus incisvus at an early stage may lead to sinusitis and respiratory track infections which will take more time to treat with the higher antibiotics like **Floxidin®** (Enrofloxacin).

Quite a large number of cases of adipsia in the cattle have been treated by the undersigned where ductus incisvus is involved by cauterizing the oral opening of the ductus incisvus with carbolic acid. For this, small cotton bud is dipped in carbolic acid and applied to the oral opening of the ductus incisvus. Due to cauterisation the ductus incisvus is nearly closed and the animals recovered spontaneously. In few treated animals, cauterisation was repeated after 48 hours.

Reference : Umakantan, T. (2001). ***The Blue Cross Book*, 17:** 45-46.

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:

Title	: Note on the Outbreak of Pox in Sheep
Name/s of author/s	: K. Kumari, P.C. Chowdhri and P.K. Das
Place of work	: Department of Pharmacology, Bombay Veterinary College, Parel, Mumbai-400 012, MS
Materials and Methods	: In details.
Results and Discussions	: With the help of tables/ figures etc.
Reference/s	: For Periodical/s : Surname/s and initials/s of author/s, year of publication in parenthesis, abbreviated title of journal ***(italic)***, volume number **(Bold)**, first and last page number/s. e.g. Chhabra, D., Moghe, M.N. and Tiwari, S.K. (1996). *Ind. Vet. J.*, **82** : 1-3. : **For Books :** Name/s of author/s, year of publication in parenthesis, title of the book, edition **(Bold)**, name of publishers ***(Italic)*** and place. Radostitis, O.M., Blood, D.C. and Gray, C.C. (1994). Veterinary Medicine, **8th Edn.**, *English Language Book Society (ELBS)*, London
Tables and Figures	: 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 : adatta@intervetindia.com.

All manuscripts should be mailed to the following address :

Dr. A.K. Datta, Editor, *"The Blue Cross Book"*, Intervet India Pvt. Ltd., Plot No. 41, Road No.2, The Sagar Co-operative Housing Society Ltd., Banjara Hills, Hyderabad - 500 034. Tel.: Direct Phone : +91-40-6564451, 6564459 and 6564434 Mobile : 09849041787. Fax : +91-40-6564453.

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