Diarrhoea or scours in piglets can be common at both the neonatal and the post-weaning stage. A trial was conducted to evaluate efficacy of polyherbal antidiarrhoeal and gut function modulator Salcocheck (supplied by m/s Ayurvet Ltd. Baddi, HP, India) in reducing incidence of post weaning diarrhoea and mortality rate in weaned piglets. A total of 25 White Yorkshire piglets irrespective of sex of approximately 1 month of age were included in the trial and were divided in 5 different groups. Group T1 piglets were treated with Ciprofloxacin – Tinidazole tab @ 10mg/kg body wt., group T2 were treated with mixture of Salcocheck premix @ 500 g/tonne of feed and Ciprofloxacin-Tinidazole tab @ 10mg/kg body wt., group T3 piglets were treated with Salcocheck@1kg/tonne of feed. Treatment was given in all the groups for 3-5 days depending upon severity of condition. Group T4 was positive control, comprising of diarrhoeic piglets given no treatment, group T5 was negative control, comprising healthy piglet without any history of diarrhoea. Parameters recorded were body weight gain (Kg), mortality, colour and consistency of faeces, clinical observation of piglets, number and duration of treatment. Significantly better results in term of clinical observations, recovery rate, duration and number of treatment were obtained in groups T3 and T2 as compared to group T1 and untreated group T4. No mortality was recorded in polyherbal treated groups and negative control group as compared to 20% and 60% mortality in group T1 and T4 respectively. The body weight gain was significantly high in Salcocheck treated groups T2 and T3 as compared to T1 and T4. From the results of the present study it can be concluded that polyherbal formulation Salcocheck is efficacious in prevention and treatment of post weaning diarrhea in piglets along with improvement in growth of piglets.
Key words: antidiarrhoeal, gut modulator, mortality, polyherbal, weaning.

INTRODUCTION
Diarrhoea or scours in piglets can be common at both the neonatal and the post-weaning stage. It is a common cause of mortality in piglets and is often closely associated with poor hygiene, inappropriate husbandry (e.g. early weaning), stressful environment and inappropriate feeding factors. Weaning imposes tremendous stress on piglets and is accompanied by marked changes in gastrointestinal physiology, microbiology and immunology \(^{[1, 2]}\) and thus their susceptibility to viral and bacterial infections. Owing to these changes, the period following weaning is characterized by a high incidence of intestinal disturbances with diarrhoea and depression of growth performance in piglets. Post-weaning diarrhoea is usually associated with proliferation of one or more strains of enterotoxigenic Escherichia coli (ETEC) in the gastrointestinal tract \(^{[3, 4]}\). At weaning, pigs have to deal with the abrupt interruption in the established social interaction with sow and littermates and the stress of adapting to a new environment \(^{[5]}\). In addition, the piglet has to cope with the sudden withdrawal of sow milk and adapt to less digestible, plant-based dry diets containing complex protein and carbohydrate including various anti-nutritional factors \(^{[5, 6]}\). Hence, piglets have a sharp reduction in feed intake immediately after weaning \(^{[1]}\). Antibiotics and minerals, especially ZnO and CuSO\(_4\), are often included in the diets for weaned pigs to control post-weaning diarrhoea (PWD) and optimize growth performance \(^{[7]}\). However, owing to the possible contribution of in-feed antibiotics to the development of antibiotic-resistant strains of bacteria \(^{[8]}\), the European Union (EU) implemented a full ban on in-feed antibiotics usage in livestock diets. There is also an ongoing interest to minimise or completely eliminate the inclusion of in-feed antibiotic in livestock diets in other parts of the world \(^{[9]}\). Based on the EU experience, a ban on the usage of in-feed antibiotics is usually accompanied by serious production consequences, such as an increase in weaning age and a reduction in the number of piglets weaned per sow per year \(^{[10, 11]}\). There are also concerns about environmental accumulation of minerals resulting from high dietary levels of inorganic zinc and copper. To keep the swine industry profitable, it is imperative to find alternatives/replacements to infeed antibiotics and minerals that are effective in reducing the incidence and severity of digestive problems associated with the period immediately after weaning. Therefore present study was conducted to evaluate the efficacy of herbal formulation Salcochek in treatment of weaning diarrhoea in piglets.
MATERIAL AND METHODS
The present study was conducted in the College of Veterinary and Animal Sciences, RK Nagar Tripura.

Twenty five growing piglets of approx. 1 month old of White Yorkshire breed were selected for the experimental study. Out of which 20 numbers were diarrhoeac and rest 5 were healthy piglets. These piglets were divided into five groups of 5 piglets each. Group T1 piglets were treated with Ciprofloxacinc-Tinidazole tab @ 10mg/kg body wt. for 3-5 days, group T2 were treated with mixture of Salcocheck premix @ 500 g/tonne of feed (0.15g per piglet considering average feed intake 300g per piglet) and Ciprofloxacinc-Tinidazole tab @ 10mg/kg body wt. for 3-5 days, group T3 piglets were treated with Salcocheck@1kg/tonne of feed (0.3g per piglet considering average feed intake 300g per piglet) for 3-5 days, group T4 was positive control, comprising of diarrhoeac piglets reported with the history of diarrhoea tentatively diagnosed to be specific or bacterial origin on the basis of history or clinical signs and were given no treatment, group T5 was negative control, comprising healthy piglet without any history of diarrhoea. Water was provided adlibitum to all the animals.

Salcochek Premix is a polyherbal antidiarrhoeal and gut function modulator comprising of pre standardized herbs like Aegle marmelos, Holarrhena antidysenterica, Berberis aristata and many more in fixed concentration.

In order to evaluate the efficacy of Salcochek Premix for treatment of weaning diarrhoea in piglets, clinical signs (Daily appetite, Colour and consistency of faeces, Normal appearance of the animal) were observed along with duration of treatment, number of treatments and time required for recovery. In addition to this mortality rate and average weekly body weight gain was also recorded.

Statistical analysis
All the results were analyzed statistically by analysis of variance to determine the means and standard error.\(^{[12]}\)

RESULTS AND DISCUSSION
Post weaned diarrhoeac piglets were presented with the history of acute and chronic diarrhoea. Weaners demonstrated ill-thrift, pasty to liquid yellow to brown faeces, loss of
appetite etc. The clinical signs tentatively diagnose it to be a case of post weaning \textit{E.coli} diarrhoea.

\textbf{Colour, consistency of faeces before and after treatment}

The colour & consistency of faeces before the treatment was yellow/brown pasty to liquid in all the piglets suffering from diarrhoea. In recovered cases after treatment in group T1, T2 and T3, it was recorded to be off-white or brown semisolid to solid as compared to no changes in the fecal consistency in positive control group T4.

\textbf{Number and duration of treatment and recovery rate}

The duration of treatment was only 3 days in treatment groups T2 and T3 treated with Salcochek given in combination with antibiotic & alone respectively, as compared to 3-5 days in group T1 piglets treated with antibiotics alone. Number of treatments required for recovery in group T1 & T3 treated with either Antibiotic or herbal antidiarrhoeal preparations Salcochek alone varied from 3 to 5. However, only 3 treatments were required for recovery in group T2 treated with co therapy of Antibiotic & polyherbal formulation Salcochek. Similarly, the recovery rate was fastest in Salcochek treated groups T2 and T3 (3 days), followed by T1 (4 days) as compared to no recovery in positive control group T4.

\textbf{Mortality}

In positive control group T4 comprising diarrhoeal & untreated weaned piglets, an overall mortality of 60% was recorded. In contrast, no mortality was recorded in the healthy group T5 and treatment groups T2 and T3 treated with Salcochek in combination with antibiotic & alone, respectively as compared to 20% mortality in antibiotics treated piglets of group T1.

\textbf{Table 2: Body weight gain in all the treatment groups at 4\textsuperscript{th} week of treatment}

<table>
<thead>
<tr>
<th>Parameters</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>T4</th>
<th>T5</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of treatments required for recovery (days)</td>
<td>3-5</td>
<td>3</td>
<td>3-5</td>
<td>No treatment</td>
<td>No treatment</td>
</tr>
<tr>
<td>Duration of treatment (days)</td>
<td>3-5</td>
<td>3</td>
<td>3</td>
<td>No treatment</td>
<td>No treatment</td>
</tr>
<tr>
<td>Recovery of clinical signs (days)</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>No recovery</td>
<td>Healthy</td>
</tr>
<tr>
<td>Mortality %</td>
<td>20</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>0</td>
</tr>
</tbody>
</table>

\textbf{Appearance of animal & Appetite}

Appearance of animal was dull & appetite was poor before treatment. However, it was normalized after treatment in all the three groups (T1, T2 and T3) by day 5\textsuperscript{th} -7\textsuperscript{th} respectively.
as compared to diarrhoeal & untreated weaned piglets of group T4, where the condition remained as it was before treatment.

**Overall body weight gain**

Overall body weight gain in all the groups after one month of treatment showed a positive trend of weight gain (table 2). The body weight gain (Kg) was significantly highest (P ≤0.05) in negative control group T5 (1.68), followed by groups T3 (1.52) and T2 (1.4) treated with Salcochek alone and in combination with antibiotics respectively as compared to antibiotic treated group T1 (0.8). However, a reduction in the body weight was observed in positive control group T4.

**Table 2: Body weight gain in all the treatment groups at 4th week of treatment**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Initial body weight (Kg)</th>
<th>Final body weight (Kg)</th>
<th>Body weight gain (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Day 0</td>
<td>4th week</td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>2.88±0.18a</td>
<td>3.68±0.25b</td>
<td>0.8</td>
</tr>
<tr>
<td>T2</td>
<td>3.44±0.43a</td>
<td>4.84±0.38b</td>
<td>1.4</td>
</tr>
<tr>
<td>T3</td>
<td>2.96±0.36a</td>
<td>4.48±0.22b</td>
<td>1.52</td>
</tr>
<tr>
<td>T4</td>
<td>4±0.16a</td>
<td>2.08±1.23b</td>
<td>-1.92</td>
</tr>
<tr>
<td>T5</td>
<td>3.02±0.14a</td>
<td>4.7±0.2b</td>
<td>1.68</td>
</tr>
</tbody>
</table>

Values with different superscripts differ significantly at P ≤0.05

**DISCUSSION**

Similar results in terms of growth and control of diarrhoea were obtained earlier also with Salcochek in cases of collibacillosis in broiler chickens \[13\]. Similarly, Vasanthakumar et al. 2012 also obtained beneficial effects of Salcochek on gut ecosystem and reducing the impact of *Clostridium Species* induced enteritis in broiler birds \[14\]. Baishya et al. 2009 also obtained similar results with Salcochek in terms of control of enteritis due to *Salmonella enteritidis* in broiler birds \[15\].

These results may be attributed to the antibacterial, antidiarrhoeal, spasmyloytic, astringent and anthelmentic action of constituent herbs *Aegle marmelos*\[16\], *Holarrhena antidysenterica*\[17\] *Berberis aristata*\[18\] present in Salcochek. Simultaneously the herbs of Salcochek has got soothing effect on intestine with formation of protective layer on intestinal mucosa and flushing of the microbes from the gut.
CONCLUSION

From the results of the present study it can be concluded that polyherbal antidiarrhoeal and gut function modulator Salcochek Premix is efficacious in prevention of post weaning diarrhoea in piglets along with improvement in general body condition and body weight gain in during high stress in post weaning period in piglets.

REFERENCES

Biotechnology, 2002; 13, 85–95.


