Efficacy of polyherbal antidiarrhoeal formulation in diarrhoeic goats

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Abstract
Total 25 adult goats of either sex (2-5 years of age) suffering from diarrhoea were selected for study. All diarrhoeic Goats (T2) were treated with polyherbal antidiarrhoeal tablet (600 mg) containing extract of unripe fruit of Aegle marmelos, bark of Dalbergia sissoo and seeds of Holarrhena antidysenterica showed complete recovery in diarrhoeic goats along with significant improvement in clinical parameters within 5th day post treatment.

Keywords: Aegle marmelos, Dalbergia sissoo, Holarrhena antidysenterica, diarrhoea, goats

Introduction
Diarrhoea is defined as an increase in the frequency, fluidity or volume of bowel movements and characterized by increased frequency of bowel sound, wet stools and abdominal pain. In clinical terms, it is used to describe increased liquidity of stools, usually associated with increased stool weight and frequency. Occurrence of diseases causes heavy economic losses in terms of livestock health and production. Advances in animal health are expected to play a major role in the progress of livestock industry. In order to increase production, health management practices are the major factors in determining the profitability and success of goat production. Goats suffer from many diseases, which result in mortality and morbidity losses resulting in low productivity of animals. Among the diseases affecting goats, gastrointestinal diseases such as enteritis is one of the most important and common health problem. The etiological agent causing diarrhoea in goats are bacterial, viral, protozoa, parasitic, nutritional, management and stress etc. It is one of most common clinical signs of GIT disease and involves both an increase in the motility of the gastrointestinal tract along with increased secretions and decrease in the absorption of fluid and thus, a loss of electrolytes and water results in severe dehydration and death.

There are many herbal plants such as Aegle marmelos, Dalbergia sissoo, Holarrhena antidysenterica, which possess antidiarrheal and antibacterial activity, which acts by reducing the gastrointestinal motility and gastric secretion and possess lesser side effects than the conventional drugs and thus are safer to use [7]. The present study was undertaken to evaluate the efficacy of polyherbal formulation in the form of tablet in diarrhoeic goats containing extracts of unripe fruit of Aegle marmelos, bark of Dalbergia sissoo and seeds of Holarrhena antidysenterica against diarrhoea.

Material and Method
The present study was carried out in the Department of Veterinary Clinical Medicine, Ethics and Jurisprudence and Teaching Veterinary Clinical Complex, Post Graduate Institute of Veterinary and Animal Sciences (PGIVAS), Akola (Maharashtra State). The unripe fruit of Aegle marmelos, bark of Dalbergia sissoo and seeds of Holarrhena antidysenterica were
collected and subjected for preparation of powder. The hydro-
ethanolic extract (40% distilled water + 60% ethanol) of
freshly prepared powder of unripe fruits of *Aegle marmelos*,
 bark of *Dalbergia sissoo*, seeds of *Holarrhena antidysenterica*
were prepared and per cent extractability was
determined. The dose of polyherbal anti diarrhoeal
formulation containing unripe fruit of *Aegle marmelos*, bark of
*Dalbergia sissoo* and seeds of *Holarrhena antidysenterica*
was formulated as 28 mg/Kg body weight in goats based on
Phytopharmacological study conducted by earlier research
worker [5] as per the method of conversion of dose described
by research worker. [6]. The polyherbal anti diarrhoeal tablets
(600 mg) containing combination of unripe fruit of *Aegle
marmelos*, bark of *Dalbergia sissoo* and seeds of *Holarrhena
antidysenterica* were prepared as per the standard defined
steps. Total 25 adult goats of either sex (2-5 years of age)
suffering from diarrhoea presented to Teaching Veterinary
Clinical Complex, PGIVAS, Akola, District Veterinary
Polyclinc, Akola and in and around Akola, Maharashtra,
India were selected for the study. All the diarrhoeic goats
were treated with polyherbal anti diarrhoeal (600 mg) tablets @
1 tablet twice a day for 3-5 days along with fluid and
supportive treatment (T2). One additional group of 10 normal
healthy goats was kept as a normal control group (T1). The
clinical parameters like rectal temperature (°F), heart rate
(/min), respiration rate (/min) and faecal consistency score
were recorded for all the diarrhoeic goats. The efficacy of
polyherbal anti diarrhoeal tablet was judged on the basis of
restoration of clinical parameters to normal in diarrhoeic goats
after treatment.

**Result and discussion**
In normal healthy goats (T1), the faecal consistency was
normal. The faecal consistency in all diarrhoeic goats was
pasty to watery before initiation of treatment (‘0’ day). The per
cent recovery in diarrhoeic goats on the basis of improvement
in faecal consistency during post treatment days is presented in
Table 1.

**Table 1: Recovery per cent (%) in diarrhoeic goats during post
treatment days**

<table>
<thead>
<tr>
<th>No of cases treated</th>
<th>No of cases recovered after treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st day</td>
<td>2nd day</td>
</tr>
<tr>
<td>3rd day</td>
<td>4th day</td>
</tr>
<tr>
<td>5th day</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>Per cent recovery</td>
<td>0%</td>
</tr>
<tr>
<td>24%</td>
<td>52%</td>
</tr>
<tr>
<td>16%</td>
<td></td>
</tr>
</tbody>
</table>

Out of 25 animals treated, 6 animals showed normal faecal
consistency on 3rd day post treatment, indicated 24% recovery
rate. Faecal consistency was restored to normal in 13 animals
on 4th day post treatment, indicated 52% recovery rate and 6
(16%) animals showed normal faecal consistency on 5th day
after treatment. These results demonstrated progressive
reduction in faecal consistency score in 23 diarrhoeic goats
indicated 92% recovery rate on 5th day post treatment in
diarrhoeic goats. Two diarrhoeic goats did not respond to
treatment.

The mean body temperature (°F), heart rate (per min) and respiratory rate (per min) in T1 and T2 group at different intervals.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Intervals</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Treatment</td>
<td>After Treatment</td>
</tr>
<tr>
<td>Temperature (°F)</td>
<td>'0' day</td>
<td>1st day</td>
</tr>
<tr>
<td>Normal Control (T1)</td>
<td>102.02± 0.08</td>
<td>101.86± 0.18</td>
</tr>
<tr>
<td>Treatment group (T2)</td>
<td>102.73± 0.21</td>
<td>102.5± 0.19</td>
</tr>
<tr>
<td>Two Mean ‘T’ test</td>
<td>3.241 *</td>
<td></td>
</tr>
<tr>
<td>Heart Rate (per min)</td>
<td>Normal Control (T1)</td>
<td>61.20± 0.44</td>
</tr>
<tr>
<td>Treatment group (T2)</td>
<td>63.64± 0.42</td>
<td>62.88± 0.41</td>
</tr>
<tr>
<td>Two Mean ‘T’ test</td>
<td>3.319 *</td>
<td></td>
</tr>
<tr>
<td>Respiratory Rate (per min)</td>
<td>Normal Control (T1)</td>
<td>25.90± 0.90</td>
</tr>
<tr>
<td>Treatment group (T2)</td>
<td>24.20± 0.54</td>
<td>23.44± 0.46</td>
</tr>
<tr>
<td>Two Mean ‘T’ test</td>
<td>1.648 NS</td>
<td></td>
</tr>
</tbody>
</table>

The mean body temperature (°F), heart rate and respiratory
rate in normal control (T1) and treatment group (T2) before
treatment (‘0’ day) and at different intervals post treatment
are presented in Table 2. In healthy control group (T1), mean
rectal temperature (°F), heart rate (/min) and respiratory rate
(/min) were within the normal range. The statistical analysis
revealed significant (P< 0.01) rise in temperature and heart
rate in group of diarrhoeic goats (T2) as compare to normal
control group (T1) before treatment. These findings are in
agreement with the earlier reports of increase in temperature
and heart rate in diarrhoeic animals [5, 6, 2, 8, 10].

The mean respiratory rate did not differ significantly between
group of diarrhoeic goats (T2) and normal controls group (T1)
before treatment. In concurrence to this, earlier research
worker [9] also reported non-significant changes in respiratory
rate in diarrhoeic animals. The mean body temperature and
heart rate was significantly improved after treatment with
polyherbal anti diarrhoeal tablet in diarrhoeic goats.

In the present study, polyherbal anti diarrhoeal tablet showed
remarkable improvement in faecal consistency along with
clinical parameters on 5th day indicating recovery in
diarrhoeic goats after treatment with polyherbal
antidiarrhoeal. These result indicated that the polyherbal
antidiarrhoeal preparation of extracts of unripe fruits of *Aegle
marmelos*, bark of *D. sissoo* and seeds of *Holarrhena
antidysenterica* was found effective and proved a potent
antidiarrhoeal in diarrhoeic goats. The finding of present
study are in agreement with the findings of the research
worker [4] who also reported potent anti diarrhoeal activity of
polyherbal formulation containing extract of *Aegle marmelos*,
*Dalbergia sissoo* and *Holarrhena antidysenterica* in
diarrhoeic goats. The antidiarroeal activity of this polyherbal
formulation might be due to anti diarrhoeal, antibacterial,
astringent and anti-inflammatory activities through the active
principle such as tannins, flavonoids, alkaloids, saponins,
steroïd and terpenoids [3].
The study concluded that the polyherbal antidiarrhoeal tablet containing *Aegle marmelos*, *Dalbergia sissoo* and *Holarrhena antidysenterica* @ 1 tablet twice a day along with fluid and supportive therapy for five days found effective and safe remedy in inducing recovery in diarrhoeic goats with improvement in clinical parameters.

References