ROLE OF HERBAL SUPPLEMENT IN FACILITATING OVULATION INDUCTION IN COWS SUFFERING FROM POST PARTUM ANOESTRUS.

Kamlesh Hadiya1, Anurag Borthakur2, Vikas Yadav2 and K. Ravikanth2.

1. Farm Consultant, College of Veterinary Science, Anand.

Abstract

A study was carried out to evaluate the efficacy of herbal formulation in inducing ovulation in cows suffering from post parturient anoestrus. A total of 18 cows suffering from post partum anoestrus were selected for the purpose of study and allotted into three different groups. Group T0 (n=6) was kept as control and fed standard diet. Group T1 (n=6) was treated with AV/OIP/22 @ 200g once daily along with standard diet. Group T2 (n=6) was treated with Brand A @ 200g once daily along with standard basal diet. Parameters viz. time taken for exhibition of estrus, nature of discharge pre and post treatment and conception rate were evaluated. Results revealed that there was significant increase in the no. of animals that exhibited estrus in the AV/OIP/22 treated group as compared to control. The conception rate was also found to be significantly higher in the AV/OIP/22 treated group T1 as compared to Brand A treated group T2. Thus, it can be inferred that AV/OIP/22 is highly effective in inducing ovulation in animals suffering from post partum anoestrus.
Materials And Methods: -
Experimental design: -
A trial was carried out in an organized farm at Anand district of Gujarat to evaluate the efficacy of AV/OIP/22 (M/S Ayurvet Limited) in inducing ovulation in post partum anoestrus cows. A total of 18 cows suffering from post partum anoestrus were selected for the purpose of study and allotted into three different groups. Group T0 (n=6) was kept as control and fed standard diet. Group T1 (n=6) was treated with AV/OIP/22 @ 200g once along with standard diet. Group T2 (n=6) was treated with Brand A @ 200g once along with standard basal diet. Parameters viz. time taken for exhibition of estrus, nature of discharge pre and post treatment and conception rate were evaluated.

Statistical Analysis: -
The data collected was analyzed by applying standard statistical methods described by Snedecor and Cochran (1971)

Results: -

Estrous response and duration of estrus: -
The number of animals that exhibited estrus were significantly higher in the AV/OIP/22 treated group T1 (five animals out of six animals exhibited estrus) as compared to the control group T0 (two animals out of six animals exhibited estrus). There was, however, no difference in the average duration of estrus between the treated group and the control group (table 1).

<table>
<thead>
<tr>
<th>Groups</th>
<th>No of animals</th>
<th>No. of animals Exhibited estrus</th>
<th>Average Percentage</th>
<th>Average Duration of estrus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group T0</td>
<td>6</td>
<td>2</td>
<td>33.33%</td>
<td>24 hrs</td>
</tr>
<tr>
<td>AV/OIP/22 treated group T1</td>
<td>6</td>
<td>5</td>
<td>83.33%</td>
<td>16-24 hrs</td>
</tr>
<tr>
<td>Brand A treated group T2</td>
<td>6</td>
<td>6</td>
<td>100%</td>
<td>12-24 hrs</td>
</tr>
</tbody>
</table>

Time taken for exhibition of estrus: -
The time taken for exhibition of estrus was minimum in AV/OIP/22 treated group T1 with two animals exhibiting estrus on 3rd day, two animals on 4th day and one animal on 7th day. However, in the control group, estrus by one animal was exhibited at a protracted length of 7th day (table 2).

<table>
<thead>
<tr>
<th>Group</th>
<th>No. of cows exhibiting estrus.</th>
<th>Time taken for exhibition of estrus</th>
<th>Average Time taken for exhibition of estrus Mean S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group T0</td>
<td>2 animals</td>
<td>One animal shows estrus on 3rd day</td>
<td>5.00 ± 0.00 days</td>
</tr>
<tr>
<td>AV/OIP treated group T1</td>
<td>5 animals</td>
<td>Two animals show estrus on 3rd day</td>
<td>4.00 ± 0.00 days</td>
</tr>
<tr>
<td>Brand A</td>
<td>6</td>
<td>Two</td>
<td>One One One One One One 4.83 ± 3.33</td>
</tr>
</tbody>
</table>
animals show estrus on 3rd day | animal shows estrus on 4th day | animal shows estrus on 5th day | animal shows estrus on 6th day | animal shows estrus on 8th day | days
---|---|---|---|---|---
treated group T2 | animals | | | | |
animals show estrus on 3rd day | animal shows estrus on 4th day | animal shows estrus on 5th day | animal shows estrus on 6th day | animal shows estrus on 8th day | days
Table 3:- Nature of discharge
<table>
<thead>
<tr>
<th>Groups</th>
<th>No. of animals</th>
<th>No. of animals exhibiting estrus</th>
<th>Nature of discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group T0</td>
<td>6</td>
<td>2</td>
<td>Clear discharge with ropy mucous hanging from the vulva</td>
</tr>
<tr>
<td>Control group T1</td>
<td>6</td>
<td>5</td>
<td>Clear discharge with ropy mucous hanging from the vulva</td>
</tr>
<tr>
<td>Control group T2</td>
<td>6</td>
<td>6</td>
<td>Clear discharge with ropy mucous hanging from the vulva, But the elasticity and viscosity is comparatively less</td>
</tr>
</tbody>
</table>

Conception rate: -
In the control group T0, two animals conceived after A.I. In the AV/OIP/22 treated group T1, 5 animals showed estrus and four animals conceived after A.I. In the Brand A treated group T2, six animals showed estrus and four animals conceived after A.I. The conception rate was higher in the AV/OIP/22 treated group T1 as compared to the control and comparable with Brand A treated group T2 (table 4).

Table 4:- Conception rate of the control and treated groups
<table>
<thead>
<tr>
<th>Groups</th>
<th>No. of animals</th>
<th>No. of animals conceived</th>
<th>Conception %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control group T0</td>
<td>6</td>
<td>2</td>
<td>33.33 %</td>
</tr>
<tr>
<td>AV/OIP/22 treated group T1</td>
<td>6</td>
<td>4</td>
<td>66.66%</td>
</tr>
<tr>
<td>Brand A treated group T2</td>
<td>6</td>
<td>4</td>
<td>66.66%</td>
</tr>
</tbody>
</table>

Discussion: -
Citrullus colocynthus, a constituent ingredient of AV/OIP/22 is a rich source of flavonoids (Benariba et al., 2013), isovitexin (Akhzari et al., 2015), cucurbitans (Hatam et al., 1989) and caffeic acid (Shokrzadeh et al., 2013). The improvement in the estrus response may be attributed to caffeic acid which is known to inhibit nuclear factor kappa B (Akyol et al., 2015), a transcription factor which brings about changes in m- RNA synthesis and have a negative effect on reproductive performance. (Manimaran et al., 2016). A substantial body of research has pointed towards a link between decrease in (NF)-κB and a parallel increase of IκBα-protein (Paciolla et al., 2011), which play important and conserved roles in immune and stress responses (Oeckinghaus et al., 2009) and indirectly influence bovine reproduction. The improved estrus response may have also been brought about by the presence of flavonoids which are known to possess anti-oxidant property (Pietta, 2000) and improve reproductive health (Lessera et al., 2015). Presence of isovitexin may also have played a significant role in bolstering estrus response as it is known to possess free radical scavenging activity (Khole et al., 2016) and neutralize the peroxy free radicals that hamper the proper functioning of the reproductive organs (Agrawal et al., 2005). Numerous studies have also shown that there is significant influence of inflammation on follicular development and function postpartum (Sheldon et al., 2002). Lipopolysaccharides from bacteria such as E.Coli suppress the release of LH by the pituitary (Sheldon et al., 2009),
which in turn leads to a smaller diameter of postpartum ovarian dominant follicles and as a consequence resulting in lower plasma estradiol levels. Cucurbitans, a phytochemical present in *Citrullus colocynthis*, is known to possess significant anti inflammatory property (Peters et al., 1997) and act via suppression of TNF-α-induced inflammatory cytokines production interleukin-1β (IL-1β), interleukin-6 (IL-6), and interleukin-8 (IL-8) mRNA and protein expression in human synoviocyte MH7A cells (Jia et al., 2015). *Zingiber officinale*, also a constituent ingredient of AV/OIP/22 is known to possess anti-oxidant property (Ghasemzadeh et al., 2010) and may aid in onset of ovulation in cows suffering from post partum anoestrus.

**Conclusion:**
Administration of polyherbal formulation to the cows suffering from post partum anoestrus is effective in hastening the onset of estrous in those cows and also increase the chances of conception.

**Acknowledgement:**
The authors are thankful to Ayurved Limited, Baddi, India and Organized Veterinary farm at Anand, Gujrat for providing the facilities required for the trial.

**Reference:**