VITEX AGNUS-CASTUS EFFECTS ON INTER ESTRUS INTERVAL IN DAIRY COWS

Mehran Farhoodi, Mehran Khorshid, Donya Eyvani

Faculty of Veterinary Medicine, Karaj Branch, Islamic Azad University, Karaj, Iran.

SUMMARY

Vitex agnus-castus is a native shrub of the Mediterranean region. It is dopaminergic and has been used as a remedy for low progesterone concentrations, corpus luteum deficiency, and etc. In women, for more than 2500 years.

In this study, Holstein dairy cows divided into control (n=7) and treatment (n=7) groups. After 21 days prescription of 50ml hydroalcoholic extract of the plant in treatment group orally, both groups synchronized by two intra muscular injection of PGF2α in 11 days apart. Prescription of herbal extract in the treatment group continued for 23 days, till to end of synchronized cycle.

During this estrus cycle blood samples collected and progesterone concentrations of separated serums were measured by RIA, moreover, ovaries and uterus of cows were examined by ultrasonography. Signs of estrus before and after treatment in two groups were recorded.

Results showed that 45 days prescription of the extract in treatment group increased average inter estrus interval versus control group (22.3 days, and 20.1 days, respectively, P= 0.05) and average serum progesterone concentration in treatment group was increased versus control group (2.88±0.63ng/ml, and 2.19±0.57ng/ml, respectively) about 32% during study cycle, but it is not statistically significant (P>0.05).

In attention to worries about probable health risks of using hormones in reproductive management in herds for meat and milk consumers and according to increasing effects of Vitex on estrus cycle and progesterone concentration, perhaps it can be a safe alternative remedy in reproduction management of dairy cows.

INTRODUCTION

All over the world, low fertility is a major limiting factor in highly managed dairy farms [1]. Various factors are associated with low fertility of the dairy cows, which one of them is luteal dysfunction and subsequent low progesterone concentration. Low progesterone levels may disturb reproductive procedures either before or after insemination [4]. The situation has been aggravated in recent years because achieving a continuous rise in milk production is associated with a gradual decline in plasma progesterone concentrations, consistent either the negative relationship between milk production and progesterone concentration [6].

Luteal deficiency after insemination could be associated with either low secretion of suboptimal amounts of progesterone or with early luteal regression, which, ultimately results in embryo death [6]. Furthermore, in these conditions hormonal treatments are used widely.

Nowadays, because of probable health risks for meat and milk consumers, pursuant usage of these various hormones for reproductive and fertility management in dairy herds, there is a growing interest in search for naturally active compounds in plants, affecting the reproductive activity. One such plant is chaste tree (Vitex agnus-castus Linn.), a shrub or small tree belonging to the genus Vitex of the Verbenacea family. It is native to the Mediterranean region and is found as far as western Asia. Vitex agnus-castus has been used to treat a variety of gynecologic conditions, Vitex agnus-castus is a native shrub of the Mediterranean region. It is dopaminergic and has been used as a remedy for low progesterone concentrations, corpus luteum deficiency in women, for more than 2500 years [3].

Over the past years, it has been used as a remedy for hyperprolactinemia, menstrual irregularities, corpus luteum deficiency, fertility disorders, and poor lactation in women [3]. In veterinary practice, potentially, it has been recommended for infertility and hormonal problems caused by anovulatory cycles, luteal phase deficiency and low progesterone concentration levels, and latent hyperprolactinemia [2, 10]. The objective of present study is preliminary assessing the effects of Vitex agnus-castus extract on luteal function include inter estrus interval in dairy cattle.
MATERIAL AND METHODS

In this study, Holstein dairy cows divided into control (n=7) and treatment (n=7) groups. After 21 days prescription of 50ml hydroalcoholic extract of the plant in treatment group orally, both groups synchronized by two intramuscular injection of PGF2α in 11 days apart. Then Prescription of herbal extract in the treatment group continued for 23 days, till to end of synchronized cycle.

RESULTS

Results showed that 45 days prescription of the extract in treatment group increased average inter estrus interval versus control group (22.3 days, and 20.1 days, respectively, P= 0.05) (Table 1) and average Serum progesterone concentration in treatment group was increased versus control group (2.88±0.63ng/ml, and 2.19±0.57ng/ml, respectively) about 32% during study cycle, but it is not statistically significant (P>0.05) (Table 2).

<table>
<thead>
<tr>
<th>Day of Estrous Cycle</th>
<th>Treatment Group</th>
<th>Control Group</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt;</td>
<td>0.15±0.82</td>
<td>0.58±0.78</td>
<td>0.70</td>
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<tr>
<td>5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>0.88±0.82</td>
<td>0.65±0.78</td>
<td>0.83</td>
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<td>9&lt;sup&gt;th&lt;/sup&gt;</td>
<td>3.69±0.82</td>
<td>2.43±0.78</td>
<td>0.25</td>
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<td>13&lt;sup&gt;th&lt;/sup&gt;</td>
<td>5.33±0.82</td>
<td>4.58±0.78</td>
<td>0.50</td>
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<tr>
<td>18&lt;sup&gt;th&lt;/sup&gt;</td>
<td>5.18±0.82</td>
<td>5.20±0.78</td>
<td>0.53</td>
</tr>
<tr>
<td>22&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>2.07±0.85</td>
<td>0.97±0.78</td>
<td>0.33</td>
</tr>
<tr>
<td>All Days of The Study</td>
<td>2.88±0.63</td>
<td>2.19±0.57</td>
<td>0.60</td>
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</tbody>
</table>

Table 1: Mean of Estrous Cycle Duration (days) Before and After Vitex Treatment.

<table>
<thead>
<tr>
<th></th>
<th>Before Treatment</th>
<th>After Treatment</th>
<th>P Value</th>
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<tbody>
<tr>
<td>Treatment Group</td>
<td>20.17</td>
<td>21.00</td>
<td>0.32</td>
</tr>
<tr>
<td>Control Group</td>
<td>22.29</td>
<td>20.14</td>
<td>0.05</td>
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</table>
DISCUSSION

Studies which conducted in rats show that vitex extract effects on anterior pituitary gland, which decrease FSH hormones and increase LH therefore stimulates producing progesterone hormone [6].

Losh et al conducted a Study in 1990 on 20 female patients with secondary amenorrhea. experimental results on serum concentrations of progesterone, LH and FSH in 15 patients showed increased specific rates of progesterone and LH while FSH did not change or the rate Was slightly decreased and menstrual cycles were started in 10 women [5].

According to these studies that indicating Vitex agnus-Castus increased luteal phase progesterone in humans, primates and laboratory animals and despite the lack of significant results in our study, average serum progesterone levels increased during the estrus cycle in Vitex group and more increased average progesterone levels during the cycle in the treatment group than the control group was similar to the results of studies conducted in other species.

Based on signs of estrus, length of estrus cycle after treatment were 22.29 days in treatment group and 20.14 days in the control group ( p=0.05). Base on our study estrus cycle length in the treated group was longer than the control group.

Also, Milewicz et al in 1993 investigated the effects of Vitex agnus castus extract during the luteal phase which 37 patients (20 placebo and 17 Vitex group) subjected with short luteal phase were studied. In the final estrus cycle of vitex group were changed to normal [7].

CONCLUSION

Therefore the present results in cattle were surprisingly similar to those previously reported in humans. This significant increased estrus cycle length in vitex group compared in with control cattle was possibly due to effect of vitex on increasing luteal phase and progesterone in cattle.

perhaps according to these results vitex agnus castus extract in cattle leds to more potent corpus luteum which possibly grow faster and more lasting than the control group, and estrus cycle length showed a clear increase which it was probably due to luteotropic effects of vitex.

In attention to worries about probable health risks of using hormones in reproductive management in herds for meat and milk consumers and according to increasing effects of Vitex on estrus cycle and progesterone concentration, perhaps it can be a safe alternative remedy in reproduction management of dairy cows.

REFERENCES
