The document is about the effectiveness of Lecirelin and Buserelin (Gonadotrophin releasing hormone agonists) for fixed time insemination in buffalo. The experiments were conducted on 270 lactating buffaloes ranging from 45 to 60 days postpartum from two different farms located in São Paulo and Mato Grosso do Sul (Brazil). Buffaloes were divided into two groups. Group 1 received 20 µg of Buserelin intramuscularly at a random day of the estrous cycle and, seven days later, 15 mg of prostaglandin F2α. Group 2 received 10 µg of Buserelin intramuscularly two days after prostaglandin administration and 25 µg of prostaglandin F2α. Artificial insemination was performed 16 hours after the last injection in both groups. Pregnancies were diagnosed by transrectal ultrasonography 30 days after artificial insemination. Conception rates were not influenced by farm (P > 0.05) and were similar in both groups (Group 1: 47.0% (62/132); Group 2: 50.0% (69/138); P > 0.05). Results show that Lecirelin is as efficient as Buserelin to synchronize ovulation for fixed-time artificial insemination in buffaloes.
In each farm, the buffalo cows were divided into two groups, regarding to body condition and post partum interval. Group 1 was composed by 132 animals, and Group 2 by 138.

Ovulation was synchronized by two GnRH agonist intramuscular injections at 9 days interval. Females in Group 1 received Buserelin (Conceptal®, Hoechst) as GnRH agonist (20 µg in the first administration and 10 µg in the second). In Group 2, the GnRH agonist used was Lecirelin (Gestran-plus®, Tecnopec). The doses of Lecirelin were 50 and 25 µg, respectively in the first and in the second administrations. Seven days after the first injection, 15 mg of a prostaglandin analogue, luprostiol (Luprostiol, Prosolvin®, Intervet) was administered in both groups. The buffalo cows were inseminated 16 hours after the last administration without attempt to estrous behaviour. The protocols are summarised in Fig. 1.

Pregnancy diagnostic was made 30 days post-inseminations by way of ultrasound scanning (PIE MEDICAL 480, Netherlands), using a 5.0 MHz linear probe. Conception rates between Groups 1 and 2 were analysed by Chi Square analysis, with significance level of 5%.

**RESULTS**

As shown in Tab. 1, mean conception rates regarding the GnRH agonist used were 47.0% for Buserelin and 50.0% for Lecirelin. There was no statistical difference between groups (P > 0.05). Also, no difference was found (P > 0.05) on conception rates between treatment groups within farms (Farm A = Buserelin 48.5% vs Lecirelin 50.7% and Farm B = Buserelin 45.2% vs Lecirelin 49.2%).

Table 1

<table>
<thead>
<tr>
<th>Treatment</th>
<th>GnRH agonist</th>
<th>Conception Rate (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>Buserelin</td>
<td>47.0% (62/132)</td>
</tr>
<tr>
<td>Group 2</td>
<td>Lecirelin</td>
<td>50.0% (69/138)</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>48.5% (133/270)</td>
</tr>
</tbody>
</table>

**DISCUSSION**

A mean conception rate of 48.5% after a single timed artificial insemination was obtained when the GnRH/PGF$_{2\alpha}$/GnRH system was employed to synchronize ovulation. This result is similar to the conception rates reported in other studies$^5,13$, in which artificial insemination was performed after visual estrus detection. Thus, we conclude that ovulations were highly synchronized, and that an adequate fertility was achieved.

An important aspect is that when this protocol is applied, estrus behaviour must not be detected, even because GnRH inhibits estrous manifestation promoting silent ovulations$^6$.

Previous experiments with ovulation synchronization in buffaloes reported the use of Buserelin as GnRH agonist, providing conception rates such as 48.8% in dairy$^5$ and 56.5% in beef animals$^8$. The present study shows that its substitution by Lecirelin does not induce significant differences in the results (conception rate of 47% for Buserelin and 50% for Lecirelin). The large number of animals in each group, and the similarity of results in two different farms, suggest that Lecirelin can be successfully utilized in buffaloes in the GnRH/PGF$_{2\alpha}$/GnRH system, providing adequate conception rates. Since Lecirelin has lower cost, the use of this GnRH agonist represents an improvement in the usefulness of the synchronization protocol.

On the other hand, the conception rates in response to the treatment with GnRH agonist in cattle have been presenting large variation. In the case of Fresian cows, there are reports of conception rates of 16.7%$^1$ or 33% in Brazilian conditions when cows were treated at 50 days post partum$^{14}$, 37.8%$^{16}$, 55.0%$^{15}$ in American dairy cows, or even 13.9% in heat stressed cows$^{11}$. Bartolomeu et al.$^2$ obtained a conception rate of 46.7% in dairy...
cross-bred Bos taurus x Bos indicus cows. The variability of the results may be attributed to different management systems and/or anestrous conditions of the females. In this experiment small variation between farms and treatments was observed. Considering that buffaloes in Brazil are generally raised under similar extensive conditions, in which they present early re-establishment of post partum ovarian activity (mean of 36 days), small variation may be expected between results of synchronization of ovulation in other experiments, since minimum good management conditions be maintained.

In this experiment, animals were treated 45 to 60 days after parturition. Based on the pregnancy rates, it is concluded that it is possible for buffalo cows to present a 12-13 months interval between parturition, even when submitted to artificial insemination procedures. Thus, genetic improvement can run closely with optimized reproductive performance when ovulation is synchronized.

Additionally, the system turns possible to inseminate 100% of the females, without conception delays that could be caused by failure of estrus detection. If the management in the farm is based on a single insemination for each female, then only around half of failure of estrus detection. If the management in the farm is based on a single insemination for each female, then only around half of them will be destined to natural breeding, which permits a reduction in the number of bulls. In this manner, gain on sale of bulls may be considered as an indirect economic advantage, with the need of a smaller number of males with high genetic merit.

Baruselli4 reported that 56% of nonpregnant buffaloes, which ovulation had been synchronized, showed estrus between 18 and 25 days post insemination. This data suggests the possibility of an intensive management of heat detection and artificial insemination with the course of seven days period. Therefore, a large number of animals, which did not become pregnant at the treatment, should be re-inseminated.

In synthesis, this experiment has shown that Lecirelin can be used as a GnRH agonist for ovulation synchronization of early postpartum buffalo females, by the GnRH/PGF2α/GnRH protocol, with fixed time artificial insemination, leading to suitable conception rates. In addition, Lecirelin has important practical advantage compared with Buserelin, permitting a reduction in the protocol costs.

ACKNOWLEDGMENTS

The authors would like to thank FAPESP and TECNOPEC for financial support of the experiment and Daniela Paes de Almeida Ferreira Braga and André Monteiro da Rocha for the English review.


Received: 01/02/2001
Accepted: 16/08/2001