Comparative Efficiency of Different CIDR Protocols for Treatment of Postpartum Anestrous in Egyptian Buffaloes
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ABSTRACT

This study aimed to evaluate the efficiency of treatment of postpartum anestrous Egyptian buffaloes in summer season. Protocols of controlled internal drugs (CIDR) as a source of exogenous progesterone were included with some hormonal preparations such as GnRH, PGF2α and estradiol benzoate (EB) for monitoring the resumption of ovarian cyclicity based on assessment of different reproductive performance parameters (EIR, TCR, PR).

The study was conducted on 120 postpartum anestrous buffalo-cows, which were diagnosed on basis of case history (> 120 days postpartum). Postpartum rectal palpation of both ovaries was performed together with collection of two blood samples with 10 days interval for assessment of serum progesterone level. Buffaloes were assigned to five groups and a control group. Buffaloes in treatment 1 (n=20) received on day (0) GnRH (10μg)+CIDR (inserted intravaginal), 25 mg PGF2α on day (7), CIDR was removed on day (8), 2nd dose of GnRH on day (9). Buffaloes in treatment 2 (n=20) received on day (0) GnRH (10mg)+CIDR, CIDR was then removed+2nd dose of GnRH on day (7). Buffaloes in treatment 3 (n=20) received CIDR on day (0), CIDR was removed+PGF2α (25mg) injected on day (7). Buffaloes in treatment 4 (n=20) CIDR inserted +GnRH (10mg) on day (0), CIDR removal+25mg PGF2α on day (7), 24hrs EB was injected. Buffaloes in treatment 5 (n=20) CIDR for 7 days then removed. Buffaloes in control group (n=20) had no treatment.

Results in treatment 1 (P4, 0.86±0.1) were; EIR (80%), TCR (84.2%) and PR (80%). While, in treatment 2 (P4, 0.86±0.1) EIR (55%), TCR (68.42%) and PR (65%). Results in treatment 3 at P4 level (0.79 ±0.10) were; EIR (70%), TCR (72. 2%) and PR (65%). Also, in treatment 4 (P4, 0.87±0.10) EIR (85%), TCR (78.9 %) and PR (75%). While in treatment 5 (P4, 0.85±0.07) were; EIR (45%), TCR (57.14%) and PR (40%). In control (group 6) at P4 level (0.93 ±0.09) the results were; EIR (15%), TCR (33.3%) and PR (5%).

In conclusion, the results indicated that addition of GnRH and PF2α to progesterone based CIDR protocol (CIDR-ovsynch) substantially improves the EIR, TCR and PR in postpartum anestrous buffaloes than CIDR protocol alone and other treated groups in comparison to control.

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1. INTRODUCTION:

Several international organizations have emphasized the potentiality of the buffaloes in the economy of a number of developing countries, due to its ability to produce and reproduce under the harsh environmental conditions compared to the dairy cattle (Marai and Habeeb, 2010). The water buffaloes are used in many countries including Egypt as a source of milk and meat. Therefore, buffaloes are considered one of the most important domestic ruminants in more than 40 countries; mostly in tropical and subtropical regions (Hinkoveski, 1990).

Buffalo’s milk is preferred over the cow milk due to its 100% more fat, high protein and low level of cholesterol. Despite of these merits, buffaloes are blamed for slow reproduction, long calving interval, delayed puberty, poor estrus expression and seasonality in breeding and calving (Singh et al., 2000).

This low reproductive efficiency was mainly attributed to lower circulating concentration of hypophyseal and gonadal hormones (Madan et al., 1983) and suboptimal functioning of hypothalamo-hypophyseal and gonadal axis (Rao and Shreemannarayan, 1982).

Anestrous is the state of ovarian acyclic, reflected by complete sexual inactivity without manifestation of estrus with the absence of palpable follicular or luteal structures. Anestrous was generally defined as the state of ovarian acyclic, reflected by complete sexual inactivity without manifestation of estrus (Wright and Malmo, 1992).
Various research workers have obtained satisfactory results by the use of different hormonal preparations to stimulate the hypothalamic-endocrine axis and initiate ovulation and resumption of normal cyclicity of anestrus in buffaloes (Singh and Singh, 1986; Aminudeen, 1991).

A variety of progestational compounds have been administered (Malik, 2005) to mimic the luteal function by blocking the release of gonadotrophins from pituitary, so that subsequent withdrawal of these compounds may result in release of gonadotrophins to initiate follicular activity in ovaries with establishment of estrous cycles.

True anestrus condition is associated with the presence of static ovaries, and even though there is follicular development, none of the ovarian follicles that start growing becomes mature enough to ovulate. The period of postpartum anestrus is usually longer in buffaloes than in cattle under comparative management conditions (Jainudeen, 1988).

Postpartum anestrus is affected by several factors such as nutrition plane, milk yield, body condition score (BCS) at calving, suckling, parity calving season and other factors as documented by Shah et al. (2010), Barile (2005b) and El-Wishy (2007).

Nutrition, presence of calves, loss of body weight, season and poor management are predisposing factors for postpartum anestrus (El-Wishy, 2007b; Baruselli et al., 2001; Ribeiro et al., 2003). The heredity also determines suboptimal levels of gonadotropins and variable progesterone concentration in a systemic circulation (Terzano et al., 2012). However, the basic cause is a low secretion of follicle-stimulating (FSH) and luteinizing hormone (LH) and lack of pre-ovulatory LH surge (El-Wishy, 2007a).

During the last few years, several studies have been attempted to treat the prolonged postpartum anoestrus in buffaloes by using hormonal treatments such as gonadotropin releasing hormone (GnRH), gonadotropins (Gn), estradiol benzoate (EB), prostanglandin F2α (PGF2α) and progesterone (Singh et al., 2003).

The aim of this work is to study the effect of exogenous progesterone (CIDR) protocols in combination with different hormones for treatment of postpartum anestrus in Egyptian buffaloes in relation to serum progesterone level.

2. MATERIALS AND METHODS:

2.1. Animals

This study was performed during summer months of 2014 and 2015 on 120 postpartum anestrus dairy buffalo-cows (Bubalus bubalis) in the private farms of El-etter, El-esawy and Ayman Hamada in Abis, Alexandria, Egypt.

Diagnosis of anestrus based on case history more than 120 days, two rectal palpation of both ovaries (10days interval). Diagnosis was confirmed by progesterone assay (P4<1, true anestrus; P4>1, subestrous).Ovaries without palpable structure comprised smooth inactive ovaries (true anestrus), while ovaries with palpable luteal structures (subestrous).

2.2. Blood sampling

Serum samples were collected from Juglar vein (twice with 10 days interval) from all animals before starting treatment protocols and kept in icebox until analysis (Electrochemoluminescence immunoassay"ECLIA", Mabarat Al-Asafara Lab.).

2.3. Drugs used for treatment

2.3.1. Controlled internal drug release (CIDR®)

A piece of plastic containing 1.38 grams of progesterone (Pfizer New Zealand Ltd, Auckland, New Zealand) applied by a special applicator into the vagina.

2.3.2. Enzaproast®-T 25mg Dinoprost as trometamol were intramuscular injected (Libourne-France).

2.3.3. Receptal® each ml Contains: Busereline acetate 4.2µg (corresponding to 4.0µg buserline) for intramuscular injection for estrous synchronization and ovulation: (10µgGnRH) (2.5 ml/animal) product of Intervet International Gmbh-Germany.

2.3. 4. Folon® ampoules each ampoule 1ml contains (5mg EB) Estradiol Benzoate (Miser Company for pharma .Ind, S.A.E).

Treatment protocols evaluated in this study were according to Hafez (2000). Also, reproductive performance parameters including: estrus induction rate (EIR), treatment estrus interval (TEI), overall 1st service conception rate, number of services per conception (S/C) and overall pregnancy rate (PR).
2.4. Treatment groups:

Group 1: 20 postpartum anoestrus buffaloes divided into 15 buffalo-cows with P4<1ng/ml (true anoestrus) and 5 buffaloes-cows with P4>1ng/ml (subestrus) were subjected to this protocol (CIDR-Ovsynch)+CIDR+GnRH10μg(day0)+25mgPGF2α(day7)-CIDR removal (day8)- GnRH10μg(days9)-AI.

Group 2: 20 postpartum anoestrus buffaloes divided into 15 buffalo-cows (true anoestrus) and 5 buffaloes-cows (subestrus) were subjected to this protocol CIDR+GnRH10μg(day0)+ CIDR removal +GnRH10μg(days7)-AI.

Group 3: 20 postpartum anoestrus buffaloes divided into 14 buffalo-cows (true anoestrus), and 6 buffalo-cows (subestrus) were subjected to this protocol CIDR(day0)-CIDR removal +25mg PGF2α(day7)-AI.

Group 4: 20 postpartum anoestrus buffaloes divided into 12 buffalo-cows (true anoestrus) and 8 buffaloes-cows (subestrus) were subjected to this protocol CIDR-GnRH10μg (day0)-CIDR removal +25mg PGF2α (day7)-24 hrs EB-AI.

Group 5: 20 postpartum anoestrus buffaloes divided into 12 buffalo-cows (true anoestrus) and 8 buffaloes-cows (subestrus) were subjected to this protocol CIDR alone for 8 days then removed.


2.5. Heat detection and A.I.

Heat detection was carried by visual observation (twice daily, 6am & 6pm) for at least 30 minutes to detect typical signs of estrus (restlessness, bellowing, erected teats and decrease milk) and this signs confirmed by rectal examination (turgid, coiled, edematous uterus and hornes besides clear vaginal mucus).

Buffaloes were inseminated by a good quality proven semen from a single bull (Semen production Unit, Animal Production Research Institute, Sakha, Kafer El sheikh governorate) 10-12 hours of the standing estrus (heat).

Pregnancy diagnosis was performed at 45-60 days post insemination by rectal palpation.

3. RESULTS and DISCUSSION

The recent diagnostic tools of ovarian inactivity not depend only on rectal palpation but also on using serum progesterone assay or by ultrasonography scanning technique (Singh et al., 2000). Using rectal palpation alone for diagnosis of post-calving anoestrus in buffaloes is not enough where 50 % missing of C.L was possibly available. Generally, missing changes are higher due to the fact that the mature CL has less crown or do not protrude sufficiently above ovarian surface. So far, the accuracy of rectal palpation of ovaries depends on its size. The most important diagnostic method of ovarian activity by using the standard rectal palpation technique with one or more of the recent aids e.g. serum progesterone assay or ultrasonic scanning (Usmani et al., 1990).

Most investigators reported that harsh climates result in a decreased expression of overt estrus due to ovarian inactivity prevailing as a consequence of the heat stress that possibly causes aberration in the endocrine profile, poor expression of estrus and poor conception rate and long calving interval (Singh et al., 1989 and Chaudhari et al., 2012).

The buffalo has been regarded as a poor breeder due to poor fertility in the majority of conditions under which they are raised (Jauindeen and Hfez, 1983 and Barile, 2005). Heat stress decreased thyroid activity, which indirectly reduce the buffalo reproductive efficiency. Heat stress has a direct effect on neuroendocrine setup in buffaloes (Razdan, 1988). High temperature causes hyperprolactinemia which reduce LH frequency, poor follicle maturation, and decreased estradiol production in anestrous buffaloes leading to ovarian inactivity (Palta et al., 1977). Heat stress also altered the oocyte or the reproductive tract so that normal embryonic development was compromised (Hansen, 2003).
Table (1) CIDR+GnRH(d0)-PG(d7)-CIDR removal (d8)–GnRH(d9)-AL protocol."group1"

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of treated animal</th>
<th>Average P4 ng/ml</th>
<th>TEI Days</th>
<th>EIR</th>
<th>No. of S/Conc.</th>
<th>FSC %</th>
<th>CR IE</th>
<th>CR 1st SE %</th>
<th>TCR %</th>
<th>PR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus (P4&lt;1ng/ml)</td>
<td>15</td>
<td>0.63±0.5a</td>
<td>2.08±0.5a</td>
<td>11</td>
<td>73.33</td>
<td>1.4±0.16</td>
<td>73.3a</td>
<td>10</td>
<td>90.9a</td>
<td>2</td>
</tr>
<tr>
<td>Sub estrus (P4&gt;1ng/ml)</td>
<td>5</td>
<td>1.50±0.7a</td>
<td>4.0±0.45c</td>
<td>5</td>
<td>100b</td>
<td>1.8±0.2d</td>
<td>20b</td>
<td>3</td>
<td>75b</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.86±0.1a</td>
<td>3.10±0.4a</td>
<td>16</td>
<td>80a</td>
<td>1.50±0.1</td>
<td>60a</td>
<td>13</td>
<td>81.3a</td>
<td>3</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).
TEI=treatment estrus interval (days). No of S/Conc. = number of service per conception.
FSC%=first service conception rate. CRIIE%=conception rate at induced estrus. PR%=pregnancy rate.
CR 1st SE%=conception rate at first spontaneous estrus. TCR%=total conception rate.

Table (2) CIDR+GnRH (d0)-CIDR removal +GnRH (d7)-AL protocol."group2"

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of treated animal</th>
<th>Average P4 ng/ml</th>
<th>TEI Days</th>
<th>EIR</th>
<th>No. of S/Conc.</th>
<th>FSC %</th>
<th>CR IE</th>
<th>CR 1st SE %</th>
<th>TCR %</th>
<th>PR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus (P4&lt;1ng/ml)</td>
<td>15</td>
<td>0.61±0.04</td>
<td>2.13±0.6</td>
<td>7</td>
<td>46.66</td>
<td>1.57±0.14</td>
<td>40a</td>
<td>7</td>
<td>57.14</td>
<td>7</td>
</tr>
<tr>
<td>Sub estrus (P4&gt;1ng/ml)</td>
<td>5</td>
<td>1.24±0.06</td>
<td>3.6±0.93</td>
<td>4</td>
<td>80b</td>
<td>1.2±0.2bc</td>
<td>60b</td>
<td>4</td>
<td>75b</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.85±0.10</td>
<td>2.5±0.5</td>
<td>11</td>
<td>55a</td>
<td>1.47±0.12a</td>
<td>45a</td>
<td>11</td>
<td>63.6a</td>
<td>8</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).

Table (3): CIDR(d0)-PGF2α-CIDR removal (d7)–AL protocol."group3"

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of treated animal</th>
<th>Average P4 ng/ml</th>
<th>TEI Days</th>
<th>EIR</th>
<th>No. of S/Conc.</th>
<th>FSC %</th>
<th>CR IE</th>
<th>CR 1st SE %</th>
<th>TCR %</th>
<th>PR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus (P4&lt;1ng/ml)</td>
<td>14</td>
<td>0.67±0.05a</td>
<td>2.38±0.49a</td>
<td>9</td>
<td>64.28</td>
<td>1.62±0.14a</td>
<td>38.5a</td>
<td>6</td>
<td>66.66a</td>
<td>2</td>
</tr>
<tr>
<td>Sub estrus (P4&gt;1ng/ml)</td>
<td>6</td>
<td>1.32±0.10a</td>
<td>3.17±0.79a</td>
<td>5</td>
<td>83.3b</td>
<td>1.5±0.22ab</td>
<td>0b</td>
<td>5</td>
<td>100b</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.79±0.10a</td>
<td>2.6±0.41ab</td>
<td>14</td>
<td>70a</td>
<td>1.58±0.11a</td>
<td>25a</td>
<td>11</td>
<td>78.57a</td>
<td>2</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).

Table (4) CIDR+GnRH(d0)- CIDR removal +PG(d7)-24hrs EB-AL protocol."group4"

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of treated animal</th>
<th>Average P4 ng/ml</th>
<th>TEI Days</th>
<th>EIR</th>
<th>No. of S/Conc.</th>
<th>FSC %</th>
<th>CRIE %</th>
<th>CR 1st SE %</th>
<th>TCR %</th>
<th>PR %</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus (P4&lt;1ng/ml)</td>
<td>12</td>
<td>0.54±0.05a</td>
<td>1.83±0.30a</td>
<td>10</td>
<td>83.3a</td>
<td>1.25±0.13a</td>
<td>50a</td>
<td>8</td>
<td>80a</td>
<td>1</td>
</tr>
<tr>
<td>Sub estrus (P4&gt;1ng/ml)</td>
<td>8</td>
<td>1.37±0.08ab</td>
<td>1.75±0.31ab</td>
<td>7</td>
<td>87.5a</td>
<td>1.00±0.00ab</td>
<td>75b</td>
<td>6</td>
<td>85.7a</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.87±0.10a</td>
<td>1.80±0.12b</td>
<td>17</td>
<td>85a</td>
<td>1.15±0.08b</td>
<td>60a</td>
<td>14</td>
<td>82.35a</td>
<td>1</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).
Table (5): CIDR alone (d0)-CIDR removal (d7) protocol. "group

<table>
<thead>
<tr>
<th>parameters</th>
<th>No of treated animal</th>
<th>Average P4ng/ml</th>
<th>TEI (days)</th>
<th>EIR</th>
<th>No of S/Conc.</th>
<th>FSC%</th>
<th>CR IE</th>
<th>CR 1st SE</th>
<th>TCR %</th>
<th>PR%</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus</td>
<td>12</td>
<td>0.65±0.04a</td>
<td>2.80±0.11a</td>
<td>5</td>
<td>41.7a</td>
<td>1.08±0.08ab</td>
<td>7.69a</td>
<td>3</td>
<td>60a</td>
<td>0</td>
</tr>
<tr>
<td>Sub anestrus</td>
<td>8</td>
<td>1.23±0.04c</td>
<td>3.74±0.83b</td>
<td>4</td>
<td>50a</td>
<td>1.71±0.18c</td>
<td>28.57b</td>
<td>2</td>
<td>50a</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.85±0.07a</td>
<td>3.60±0.34c</td>
<td>9</td>
<td>45a</td>
<td>1.65±0.20c</td>
<td>15%a</td>
<td>5</td>
<td>55.6a</td>
<td>3</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).

Table (6): Control group."group 6".

<table>
<thead>
<tr>
<th>parameters</th>
<th>No of treated animal</th>
<th>Average P4ng/ml</th>
<th>TEI (days)</th>
<th>EIR</th>
<th>No of S/Conc.</th>
<th>FSC%</th>
<th>CR IE</th>
<th>CR 1st SE</th>
<th>TCR %</th>
<th>PR%</th>
</tr>
</thead>
<tbody>
<tr>
<td>True anestrus</td>
<td>9</td>
<td>0.60±0.04a</td>
<td>0.00±0.00b</td>
<td>0</td>
<td>0b</td>
<td>0.00±0.00b</td>
<td>0b</td>
<td>0</td>
<td>0a</td>
<td>0</td>
</tr>
<tr>
<td>Sub anestrus</td>
<td>11</td>
<td>1.32±0.04bc</td>
<td>0.00±0.00c</td>
<td>3</td>
<td>27.3a</td>
<td>0.20±0.12a</td>
<td>11.1a</td>
<td>0</td>
<td>0a</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td>0.93±0.09a</td>
<td>0.00±0.00c</td>
<td>3</td>
<td>27.3a</td>
<td>0.20±0.12a</td>
<td>5%a</td>
<td>0</td>
<td>0a</td>
<td>1</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).

Table (7) Total results of different reproductive performance parameters among different treated groups with different CIDR protocols:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>No. of treated animals</th>
<th>Average P4ng/ml</th>
<th>TEI (days)</th>
<th>EIR</th>
<th>No of S/Con.</th>
<th>FSC%</th>
<th>CRIE%</th>
<th>CR 1st SE%</th>
<th>TCR%</th>
<th>PR%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group1</td>
<td>20</td>
<td>0.86±0.10a</td>
<td>3.10±0.40a</td>
<td>80a</td>
<td>1.50±0.14ab</td>
<td>60a</td>
<td>81.3a</td>
<td>75a</td>
<td>84.2a</td>
<td>80a</td>
</tr>
<tr>
<td>Group2</td>
<td>20</td>
<td>0.85±0.10a</td>
<td>2.50±0.53a</td>
<td>55a</td>
<td>1.47±0.12ab</td>
<td>45a</td>
<td>63.6a</td>
<td>75a</td>
<td>68.42a</td>
<td>65a</td>
</tr>
<tr>
<td>Group3</td>
<td>20</td>
<td>0.79±0.10a</td>
<td>2.63±0.41a</td>
<td>70a</td>
<td>1.58±0.11b</td>
<td>25a</td>
<td>78.57a</td>
<td>50a</td>
<td>72.22a</td>
<td>65a</td>
</tr>
<tr>
<td>Group4</td>
<td>20</td>
<td>0.87±0.10a</td>
<td>1.80±0.12b</td>
<td>85a</td>
<td>1.15±0.08b</td>
<td>60a</td>
<td>82.35a</td>
<td>50a</td>
<td>78.9a</td>
<td>75a</td>
</tr>
<tr>
<td>Group5</td>
<td>20</td>
<td>0.85±0.07a</td>
<td>3.60±0.34c</td>
<td>45a</td>
<td>1.65±0.20c</td>
<td>15a</td>
<td>55.6a</td>
<td>60a</td>
<td>57.14a</td>
<td>40a</td>
</tr>
<tr>
<td>Group6</td>
<td>20</td>
<td>0.93±0.09a</td>
<td>0.00±0.00c</td>
<td>15b</td>
<td>0.20±0.12d</td>
<td>5b</td>
<td>0b</td>
<td>33.3b</td>
<td>33.3b</td>
<td>5b</td>
</tr>
</tbody>
</table>

Means bearing different letters within the same column are significant (P<0.05).

Hence, in many farming systems prolonged postpartum anestrus is a major problem, along with poor nutrition and stress due to harsh climate and improper management. Synchronization of time or induction of estrus could be done using the same regimens as applied in cattle. It is possible to use various combinations of PGF2α, progesterone, progesterone releasing devices (CIDR), GnRH alone or with PGF2α and estradiol benzoate (Azawi et al., 2012). All treatments in this study for treatment of postpartum anestrous of buffaloes. Postpartum ovarian quiescence due to either true anestrous or subestrus constitutes the major reproductive failure in buffaloes (Shah, 1990). In first treatment, on application of CIDR+GnRH –PGF2α-GnRH (CIDR ovsynch) best results obtained in this group (1) as follows estrus induction rate (80%), number of service per conception (1.50±0.14),first service conception rate (60%),total conception rate (84.2%),overall pregnancy rate (80%) while the estrus induction rates with CIDR-Ovsynch protocol were (95.74%) (Vikash and Malik et al., 2014).

These results are in agreement with Baruselli et al.(2007) who showed that 100% estrus induction rates may be achieved in breeding season by combining CIDR with Ovsynch protocol in anestrous buffaloes.

The conception rate in CIDR-Ovsynch group was (74.43%) when Ovsynch protocol was associated with progesterone. Baruselli et al.(2007) and Azawi et al.(2012) observed (57.5) and (32%) overall pregnancy rates, respectively. A low
conception rate (4.7%) has also been reported by De-Rensis et al. (2005) after synchronized ovulation with Ovsynch in non-cyclic buffaloes but conception rates were significantly increased to 30% when CIDR was also combined with Ovsynch treatment.

In the second treatment In CIDR+GnRH-GnRH estrus induction rate (55%), conception rate (68.42%), pregnancy rate (65%), number of service per conception (1.47±0.12), first service conception rate (45%). Our results were in agreement with those of Vikash and Malik et al. (2014) estrus induction rate was found around (98.20%). The role of GnRH administration was to increase the pregnancy rate through hastening ovulation of the pre ovulatory follicle. A conception rate of (81.26%), pregnancy rate (71%), number of service per conception (1.98±0.10), were observed with CIDR+GnRH+GnRH protocol in the study of Vikash and Malik et al. (2014). Azawi et al., 2012, used the same protocol in summer season and showed 20% and 66.5% conception rate and pregnancy rate, respectively.

In the third treatment, CIDR+PG protocol, results were; estrus induction rate (70%), conception rate (72.2%), pregnancy rate (65%), number of service per conception (1.58±0.11), first service conception rate (25%). These results were compared to results of Singh et al. (2003) who reported better results on application of the same protocol were estrus induction rate (78%), conception rate (80.2%), pregnancy rate (75%), number of service per conception (2.58±0.00), first service conception (42.6%). This could be explained by the fact that PGF2α increases pituitary responsiveness to GnRH in the postpartum cows. Hence, the released GnRH after CIDR removal effectively stimulates the pituitary gonadotropins with subsequent estrus induction in anestrus buffaloes. Singh (2003a, b).

In the fourth treatment, CIDR+GnRH-CIDR removal+PGF2α-EB protocol; the estrous induction rate (85%), conception rate (78.9%), pregnancy rate (75%), number of service per conception (1.15±0.08), first service conception rate (60%). These results were similar to results of Naseer et al. (2012) who reported the effect of CIDR as a source of progesterone+GnRH and EB efficacy one follicular wave emergence, estrus induction, conception rate, pregnancy rate in Nili-Ravi buffaloes.

Effect of GnRH and EB on estrus response, follicular wave emergence, and ovulation and pregnancy rate in CIDR treated buffaloes has been presented as follows; EIR (66%), TEI (56±0.8 hrs), TCR (80%), PR (78%) and follicular wave emergence (3.3±0.3 days). Results of earlier work reported in beef cows (Martinez et al., 1997, Martinez et al., 2000) were in agreement with our results.

In the fifth treatment, CIDR alone protocol, the estrus induction rate (45%), conception rate (57.14%), pregnancy rate (40%), number of service per conception (1.65±0.20), first service conception rate (15%). It was found that estrus induction rate was 94.25% with the use of CIDR alone protocol by Vikash and Malik et al. (2014). These results were higher than our results with the use of CIDR alone protocol which were in agreement with those reported by Singh (2003b) and Nayak et al. (2009).

All of the results which were obtained among treated groups were higher to those of control group, where estrus induction rate (27.3%), conception rate (33.3%), pregnancy rate (5%), number of service per conception (0.20±0.12), first service conception rate (5%).

In conclusion the use of CIDR as a progesterone based treatment in combinations with different hormones improved the reproductive performance efficiency among different treated groups and within each group (true anestrus vs subestrous) when compared to CIDR alone protocol and non-treated control group, and CIDR-Ovsynch protocol was preferable than other treatment groups.

4. REFERENCES


