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Short communication

Oestrus Synchronization using Cloprostenol in Red Sokoto Doe (RSD) in Sokoto

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ABSTRACT

A dose determination study for the prostaglandin analogue cloprostenol was conducted in the Red Sokoto Does (RSD). 24 RSD were divided into four groups of 6 animals, the first group is the untreated control receiving 0µg of the cloprostenol. The second, third and fourth groups were given 50µg, 75 µg and 100 µg of the drug respectively. No oestrus response was observed in the control. All the animals in group 2, 3 and 4 were seen to come on heat between the 48th and 96th hour after the second injection, all the Does in these groups manifested heat (100% response). The study demonstrates that 50µg, 75µg and 100µg of cloprostenol are effective doses for synchronization of oestrus in the RSD. These findings were discussed in the paper.

1. Introduction

Studies in controlled reproduction or manipulation of reproduction in goats in Nigeria started with studies on the nature of oestrus cycle (Orji, 1985; Stegner *et.al.,* 2004) studied the reproductive performance and

reproduction pattern in the brown goat of the Nigerian Savannah Zone. Not until recently, most of the reproduction researches in Nigerian goats were reported on the West African dwarf goats (Stegner *et.al.,* 2004).

Oestrus synchronization and related studies unlike superovulation and embryo transfer have received considerable research attention probably due to the fact that synchronization is an essential part of the artificial insemination Protocol. Oestrus synchronization, superovulation and embryo transfer are techniques used for the manipulation and control of reproductive process. This study examines some aspects of oestrus synchronization with the use of the prostaglandin analogue cloprostenol (Estrumate®).

2. Materials and methods

The prostaglandin analogue was given to the animals at a dose rate of 0µg, 50µg, 75µg and 100µg. The animals were divided into 4 groups of six animals each. The animals were given the dose on day one and they were also given a second dose eleven days apart. The animals were observed for heat from 24 hours after the second Cloprostenol injection. Observations were made for (1) the time from the second cloprostenol injection to onset of estrus. (2) The duration of the heat period and (3) the overall response of Does to synchronization agent.

3. Results and discussion

From the result, Table 1 presents the response to cloprostenol induction. No estrus response was observed in the control group that was given 0µg of the cloprostenol. The second group was given 50µg of the drug; animals had not shown oestrus by 24 hours after the second dose for the injection. Two (2) of the goats were on heat by 48 hours, while the other 2 exhibited oestrus by 72 hours. By 96 hours after the second injection all the Does in this group were observed to come into to heat. In the third group given 75µg cloprostenol, three animals were on heat by 48 hours, 5 by 72 hours and all the six had come into heat by 96 hours after injection. In the fourth and final group they received 100µg of the hormone, 3 were on heat, by 48 hours after the second injection and at 72 hour all the goats in the group have manifested estrus.

Estrumate® and most of the different commercial preparations of cloprostenol are prepared for use in large animals i.e. cattle and horses. However, there is equally a pressing need to use these preparations for the control of reproduction in the small ruminants (sheep and goats) classified as minor livestock species (Wildeus, 1999). This therefore brings about the need for what is called the “extra label” use of these drugs, due to non-availability of pharmaceuticals for oestrus synchronisation. Pharmaceutical for oestrus synchronisation are not readily available and most applications currently used required the extra-label application of products developed for the major livestock species i.e. cattle, swine, equines (Wildeus, 1999). As a result of extra-label use, there are no available standardized protocols and doses; a variety of synchronization protocol and product combinations have been described (Freita *et al.* 1996).

Oestrous synchronization studies in Nigeria are very few and much fewer in the caprine species. Synchronization studies in the RSD are similarly very scarce (Ogunbiyi et al, 1980; Akusu and Egbunike, 1984). In the present study (Table 1) the percentage oestrous response of the RSD and the time intervals between 2nd injections to oestrus at different dose of cloprostenol was used. In the control group the animals did not show signs of heat during the study period, while Does in groups II, III and IV were seen to manifest heat within 48 hours of the second dose of the injection of the various test Does. All the animals in groups II, III and IV were seen to manifest profound standing heat by the 96th hour; a 100% response was recorded for Does in Group II (50µg), III (75µg) and IV (100µg) by the 95th hour after second hormone injection.

Findings in this study are in agreement with reports on dairy goats and Nubian goats in which Stevenson *et al.,* (2003) observed no difference in estrus response and duration of estrus in goats treated with cloprostenol (125ug) on day 6 and 12 of the oestrus cycle. Different doses of cloprostenol have been used successfully to induce estrus ranging from 50µg to 62.5µg (Baril *et al.,* 1992). These dosages were used in combination with other Gonadotrophin co-treatment. It is noteworthy that in the present study only cloprostenol was used in combination with the presence of a vasectomised buck. A 100% estrus response was obtained in all the treatment groups without any Gonadotrophin co-treatment. It is very possible to obtain a good response with the use of doses lower than the 50µg used in these trials. The use of Gonadotrophin co-treatment with reduced concentration of the synchronization agent was shown to produce positive synchronization responses.

In cyclic Nubian goats a double injection of PGF induced estrus in a high (P<0.05) percentage of Does (100%) than in sponge treated Does (70%). This is closely related with findings in this study (Table 1) of 100% in double injection days apart from cloprostenol and 62.5% in sponge treated does. Ryan *et al*, (1995) compared the double injection system (125µg cloprostenol 1 day apart) with a single injection and a combination of short-term progestagen treatment (MAP 5d) with a cloprostenol injection at sponge removal in dun Forest ewes. They found a 100% estrus response in the double injection on MAP-PGF combination treatment, whereas estrus response was reduced in the injection group (52.9%) (P<0.05). Our findings using the double injection regime agree with the above mentioned double injection regime.

4. Conclusion

This study demonstrates that cloprostenol at 50µg, 75µg and 100µg could all produce a 100% oestrus synchrony, with profound manifestation of heat signs in the Red Sokoto Doe. This study further observed that the latent period after the second cloprostenol injection in the 2 dose eleven days apart regime was about 24 hours. Other observations were on RSDs treated with cloprostenol at 0µg, 50µg, 75µg and 100µg by the 96th hour all the animals in the 50µg, 75µg and 100µg treatment groups were on heat.

Table 1
Shows the concentration of cloprostenol (estrumate®) in relation to the response of the Dc over a period of time (hours).

Dose level	Hours after 2nd injection (hours)	No. of Does on heat	% response	% cumulative response
0µg control	24	---	0	
Group 1 (n=6)	48	---	0	
	72	---	0	
	96	----	0	0
50µg control	24	---	0	
Group 2 (n=6)	48	2	33.3	
	72	2	33.3	
	96	6	33.3	100
75µg control	24	---	0	
Group 3 (n=6)	48	2	33.3	
	72	2	33.3	
	96	6	100	100
100µg control	24	----	0	
Group 4 (n=6)	48	3	50	
	72	6	100	
	96	6	100	100

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