

# 3 Histological and histochemical changes of the endometrium in cows displaying persistent corpus luteum treated with D-cloprostenol

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## INTRODUCTION

The aim of this work is assessment of the activity of a new synthetic prostaglandin (dextrorotatory cloprostenol) by means of inducing cytomorphological and metabolic endometrial changes.

## MATERIALS AND METHODS

Uterine biopsies were carried out on cows with persistent CL 0, 24, 48 and 72 h after administration of 0.150 mg of dextrorotatory cloprostenol.

The mucosa fragments were cut onto sections of a thickness of 4-5 nm. PAS staining was carried out, and the sections were made to react with alkaline phosphatase for purposes of assessment of the characteristics of the secretions of the cells (abundance of glycogen during luteal phase) and assessment of the metabolic activity of tissues (presence of a specific enzyme).

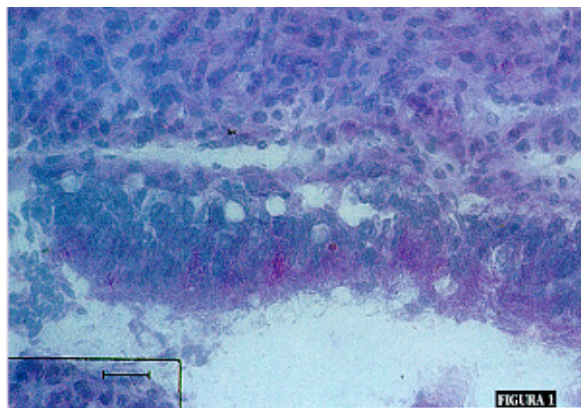
## RESULTS

Before treatment, the uterine epithelium was apparently pseudostratified and appeared to have thickened. It featured PAS-positive material in the cytoplasm and alkaline phosphatase activity. Analogous results were obtained for the uterine glands. After treatment, the epithelium was less thick, there was a reduction in PAS-positive material and the alkaline phosphatase activity disappeared at 48 h, only to reappear at 72 h.

The results obtained show that dextrorotatory cloprostenol is endowed with luteolytic activity.

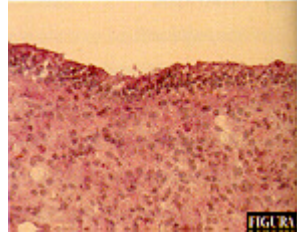
This luteolytic activity is marked and rapid. Already 24 h after treatment, the endometrial changes were marked and the endocrine activity of the CL had evidently ceased, thereby greatly affecting the secretory activity of the uterine glands. Secreted material is evacuated from the glandular lumen and there is a gradual reduction in epithelial cytoplasm PAS-positivity. At 24 h, foci of PAS-positivity are observed. At 48 h, PAS-positivity practically disappears, but at 72 h it tends to re-appear. Here, we provide a morphological, morphometrical and histochemical account of the passage of the uterine mucosa from the secretory state (characteristic of the luteal phase) to a proliferative state (typical of the follicular phase brought on by estrus, as induced by the prostaglandin examined here).

**FIGURE 1** - Presence of CL. Endometrium during secretion phase. Note pseudostratified superficial epithelium and marked PAS-positivity (PAS 40 x)

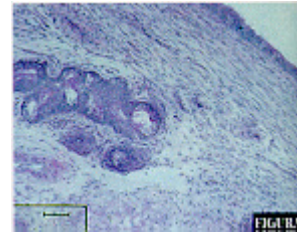




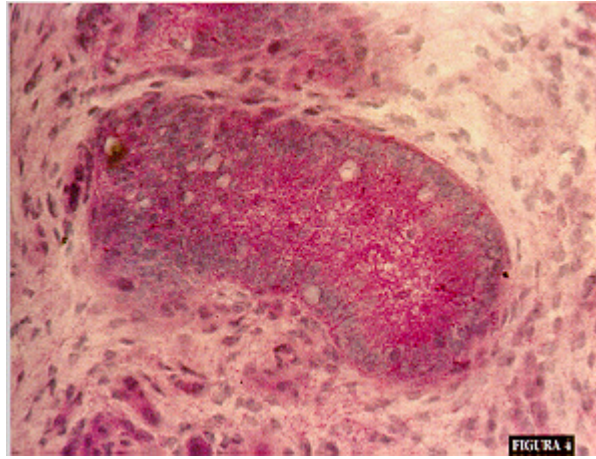
- 24 h after treatment with PgF2 $\alpha$ .  
The superficial endometrial epithelium thinned  
out and there was a considerable reduction of  
PAS-positive material (PAS 40 x)



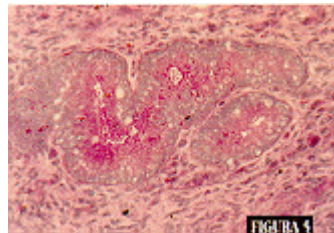
- 72 h after treatment with PgF2 $\alpha$ . The  
superficial endometrial epithelium is of the simple  
cylinder type and PAS-positivity is less marked  
(PAS 20 x)



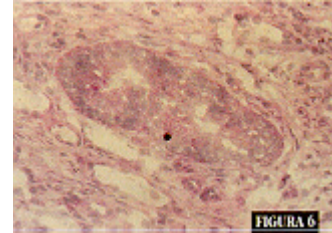
**FIGURE 4** - Presence of CL. The glandular epithelium of the endometrium during the phase of secretion is ecidedly PAS-positive (PAS 40 x)



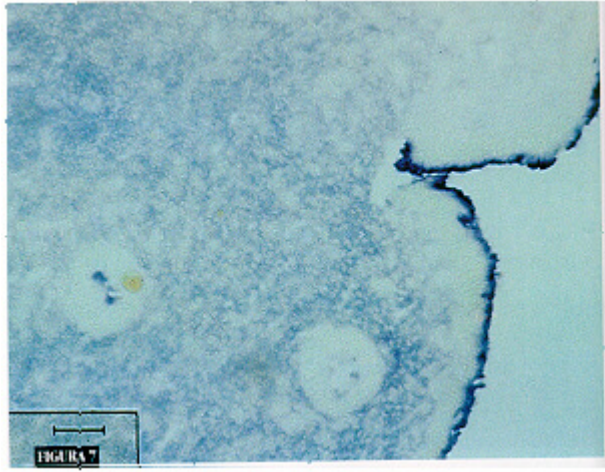
**FIGURE 5** - 24 h after treatment with PgF2 $\alpha$ .  
The glandular epithelium of the endometrium  
thinned out compared to Fig. 4. Note reduction  
of PAS-positive material (PAS 40 x)



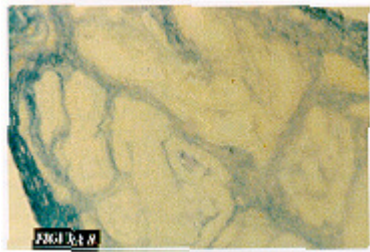
**FIGURE 6** - 72 h after treatment with PgF2 $\alpha$   
The glandular epithelium displays reduction of  
PAS-positive material and reduced secretion  
(PAS 40 x)



**FIGURE 7** - Presence of CL. The superficial epithelium of the endometrium displays considerable alkaline phosphatase activity. The glandular epithelium displays little positivity (Alkaline phosphatase 10 x)



**FIGURE 8** - 48 h after treatment with PgF2 $\alpha$ . The glandular epithelium is alkaline phosphatase reactivity-negative (Alkaline phosphatase 40 x)



**FIGURE 9** - 72 h after treatment with PgF2 $\alpha$ . The glandular epithelium is alkaline phosphatase reactivity-positive (Alkaline phosphatase 10 x)

