The initiation and completion of parturition in the sow depend largely on a drop in progesterone production by the corpora lutea. The plasma concentration of this hormone starts falling 48 h before parturition (Moléni and Wagner, 1973), and it decreases rapidly simultaneously with a rise of the blood concentrations of endogenous prostaglandin F2α and its metabolites, as well as oestrogens (Varga and Füri, 1977; Gustafsson et al., 1978).

The administration of PGE2 to sows close to parturition (111–112th day) induces a reduction in plasma progesterone, thus triggering the chain of events that lead to parturition, which normally occurs 22–30 h after treatment (King et al., 1978). The purpose of this study was to investigate the luteolytic activity of a new analogue of PGE2 (Alfaprosto) given in sows at term (111th day), comparing the fall in progesterone in treated sows with the progesterone profile in sows farrowing naturally. Besides the plasma progesterone concentration, we also compared the intervals between treatment and farrowing, and the number and weight of piglets born. Thirty sows at term, nine LxL, mean weight 140–160 kg, were divided into three groups of 10. One group was given 2 ml/head i.m. of Alfaprosto, equivalent to 2 mg of active ingredient on day 111 of pregnancy. A second group was treated with 2 ml/head i.m. of propylene glycol (experint) on day 111, and the third group was not treated, and farrowing was allowed to occur in the control group for the purpose of obtaining information on the number of liveborn and stillborn piglets.

Plasma progesterone was determined by radioimmunoassay (RIA) (Abraham et al., 1971).

All the animals treated with Alfaprosto farrowed within 24 h (min. 20, max 29). The control group either injected with the excipient propylene glycol or not injected (untreated animals) delivered respectively within 24 h (min. 22, max. 34) and 20 h (min. 20, max. 36) from the start of observation on day 111 of pregnancy. Our data confirm the recent observations by Cohn & Jones (1968) that the new analogue of PGE2, alfaprosto, hastens parturition in swine. The results we obtained were highly significant (p<0.001) as regards the time from treatment to parturition. In the group of sows treated with propylene glycol, there was a delay in the time of the beginning of farrowing, and the mean time from injection to parturition was slightly (4 h) shorter than in the control group (untreated animals). This difference was not statistically significant, which in our opinion was attributable to the disturbance caused to the animals during manipulation.

No difference was recorded between the groups regarding the number of piglets born (10.2, 9.8, 10.4), the liveborn (9.8, 9.6, 9.6) and stillborn (0.4, 0.3, 0.6); their mean weight was also close (1.039, 1.021, 1.026 kg).

At the beginning of the trial on day 111 of pregnancy, blood progesterone levels in the treated group were between 4 and 10 ng/ml; whereas the progesterone levels in the control group were 5–15 ng/ml. As a result of the endogenous synthesis of prostaglandins, the mean blood progesterone concentrations in the control group were 3.77 ± 0.72 ng/ml. The control group had progesterone levels 70–110 h before parturition 15–18 h before parturition 0.5–0.6 ng/ml (animals injected with propylene glycol) and 2.61 ± 0.27 ng/ml (untreated animals).

These differences in blood progesterone are not statistically significant, showing that only 12 h after alfaprosto treatment on day 111 of pregnancy, corresponding to 10–15 h before parturition, can be achieved from the control group treated animals, there is a drop in plasma progesterone comparable to that occurring during parturition at term, the pattern of reduction of progesterone in the treated animals resembled that of the controls.

The results show that the use in sow of new analogues of PGE2 (Alfaprosto) on day 111 of pregnancy induce farrowing within 24 h from treatment, thus reducing the time of the beginning of farrowing, in a highly significant way compared to the control groups of animals treated with the excipient only (propylene glycol), and which parturition occurred within 88 h, on the untreated sows which farrowed within 80 h. No differences were noted between treated animals and controls concerning the number of liveborn and stillborn and their weight, so it would appear that the drug does not interfere with the newborn piglets wellbeing.

The pattern of progesterone decrease in the treated groups overlapped that of the controls 24 h before parturition, suggesting that alfaprosto causes luteolysis similar to that of normally farrowing sows. These results are obtained from treated and control sows (day 111 of pregnancy) in which parturition occurred within 24 h after treatment. However, alfaprosto did not induce the side-effects typical of other prostaglandins: restlessness, diarhoea and defecation. It would thus appear that the product is very well tolerated in this animal species.