Plasma progesterone levels before and at the time of implantation in the ferret

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Two recent reports of plasma progesterone levels during early pregnancy in the ferret show significant differences during and immediately before implantation. Heap & Hammond (1974) found peak progesterone levels on Day 12 while Blatchley & Donovan (1976) recorded a maximal level on Day 14 that was approximately half that reported by Heap & Hammond (1974) for the same day using the same technique (radioimmunoassay). Heap & Hammond also measured progesterone by fluorometric and competitive protein-binding assays and found levels 2–3 times higher than did Blatchley & Donovan. In this paper I report an attempt to resolve this difference.

The 24 ferrets used in this study were obtained from Marshall Research Animals Inc. (North Rose, New York). Blood samples (1 ml) were withdrawn from the heart, heparinized, centrifuged and the plasma separated and stored at -20°C until all samples had been collected. Samples were collected from animals in oestrus and on even-numbered days following coitus up to Day 16; 3–5 animals were used at each stage. Progesterone determinations were made simultaneously on the samples in each sequence using a slight modification of the competitive protein-binding technique of Johansson (1970).

The results (Text-fig. 1) agree more closely with those of Heap & Hammond (1974) in the levels achieved at peak concentrations on Days 12–14. There is good agreement among all three sets of results for the first 6–7 days of pregnancy or pseudopregnancy and progesterone levels are at their highest during the period of implantation which begins at about Day 12.

Text-fig. 1. Plasma progesterone levels in the ferret during early pregnancy (—) compared to curves plotted from the data of Heap & Hammond (1974) (---) and of Blatchley & Donovan (1976) (-·-·-). Vertical lines represent S.E.M. and the number of samples for each point is shown in parenthesis.

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References

- BLATCHLEY, F.R. & DONOVAN, B.T. (1976) Progesterone secretion during pregnancy and pseudopregnancy in the ferret. *J. Reprod. Fert.* 46, 455-456.
- HEAP, R.B. & HAMMOND, J., JR (1974) Plasma progesterone levels in pregnant and pseudopregnant ferrets. *J. Reprod. Fert.* 39, 149-152.
- JOHANSSON, E.D.B. (1970) A simplified procedure for the assay of progesterone. *Acta endocr., Copenh., Suppl.* 147, 188-203.

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