from castrated mice can be detected after 10 days of administration. Our results extend the data published by Lau, Saksena and Chang[9]. It was shown by these authors that 17$\beta$C administered s.c. to intact male mice during 15 days decreased the fertilizing ability of inseminated spermatozoa. However, in their study the reduction in fertility might also be caused by a direct or indirect influence of the 5$\alpha$-reductase inhibitors on the testicular T secretion. Significant differences of sperm number and motility between animals substituted with TP only and animals substituted with TP and inhibitors were not observed in our study. This means that a decrease in spermatozoal fertility due to an inhibition of 5$\alpha$-steroid reductase activity in the epididymis preceded a reduction in sperm number and motility. The effects on epididymal spermatozoa caused by administration of 17$\beta$C and 17$\beta$ME are not only apparent from decreased fertilization percentages but also from decreased in vitro blastocyst formation. From results presented here it is indicated that the inhibitors studied are not toxic and exert a negligible androgenic action on epididymal tissue.

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## Modification of pulsatile pattern of basal insulin secretion in the dog by general anesthesia (Nembutal)

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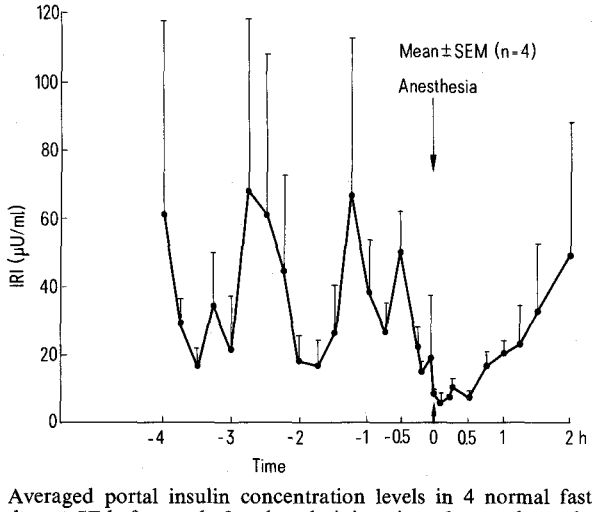
*Summary.* Pulsatile pattern of basal insulin secretion in conscious dog can be modified by the administration of general anesthesia (nembutal): the amplitude of secretory bursts is dramatically reduced. The possibility that a primary control of basal insulin secretion is in the CNS cannot be excluded.

It is generally accepted that the secretion of insulin is regulated primarily by substrate availability and it is the subject to neural and hormonal control.

However it was shown, for the first time, by Vanhelder et al.[1] that insulin is secreted in portal blood of conscious normal dogs in the form of intermittent bursts. These bursts which are not reflected in the periphery are substrate independent and on occasions exceed up to 20-fold the basal secretory insulin level. While the physiological significance of these surges has not been clarified yet, the fact that they can be manipulated by general anesthesia (nembutal) can bring some light into this phenomenon.




Averaged portal insulin concentration levels in 4 normal fasting dogs ± SE before and after the administration of general anesthesia (nembutal).

*Materials and methods.* 4 normal male mongrel dogs were used (weight between 13 and 20 kg). They were fitted with indwelling silastic portal and jugular catheters under general anesthesia (nembutal, 35 mg/kg) and aseptic conditions. The catheters were filled with heparinized saline (1:40). 2 weeks after the cathetarization, when the animals recovered, the experiment was performed. In these 2 weeks the animals were often handled and got used to withdrawal of blood samples. During the experiment blood samples were taken every 15 min for 7-12 h from the catheters. After each blood sample had been taken the blood was replaced by the same volume of saline. 2 h before the experiment was terminated the animals were anesthetized by nembutal (35 mg/kg). The stage of surgical anesthesia was reached and maintained. Samples continued to be taken in the anesthetized animals. Samples were withdrawn also at times $-10$, $-3$, $+2$, $+5$ and $+10$ min with respect to the administration of anesthesia. Plasma glucose was determined in fresh samples by the Beckman analyser (true glucose) and insulin was determined in stored, frozen samples, after thawing, by the double antibody assay of Hales and Randle[2] using the kit of Amersham Searle Corporation (Chicago, Ill.). Mean insulin levels ± SE values were calculated for 4 h before and 2 h after the administration of general anesthesia.

*Results.* The pattern of portal and peripheral plasma insulin concentrations in normal conscious dogs was described elsewhere[1,3] as well as plasma glucose values. Shortly after the anesthesia was administered to dogs the levels of portal insulin fell to their lowest points in all 4 dogs and their amplitude was dramatically decreased. This change prevailed for about 30 min after the administration of anesthesia. Then there appeared to be a tendency to restaure the original pattern of insulin release (fig.).

*Discussion.* The results of this experiment suggest the pattern of basal pulsatile insulin release in dog can be manipulated by general anesthesia (nembutal). This suggestion is supported by the fact that both the portal insulin concentrations in every particular dog and the averaged values (fig.) reached their lowest point shortly after the administration of anesthesia and remained there, with reduced amplitude and frequency, for approximately 30 min. The standard errors of averaged portal insulin values within the mentioned 30-min interval are several times smaller than those before or after. This shows that although the individual levels of portal insulin are quite different in various conscious dogs at any particular moment, they become much more uniform after the anesthesia was administered. This suggests the possibility that a primary control of basal insulin release is in the CNS. It would not contradict the experimental evidence submitted by other investigators that electrical stimulation of certain areas of the brain[4] and injections of hypothalamic extracts[5-8] are followed by enhanced insulin release. There is also a possibility of an existence of multiple control of basal pulsatile insulin release.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## Effects of CA on the epididymis of intact, castrated and TP-treated langurs (*Presbytis entellus entellus* Dufresne)


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*Summary.* Cyproterone acetate (CA) treatment of intact langurs resulted in the disappearance of spermatozoa and regression of epididymal lumen, which can be compared with castration. The antiandrogenic nature of CA was confirmed in castrates treated simultaneously with testosterone propionate.


Cyproterone acetate (CA) is known to compete for androgen receptors in the peripheral target tissues[1]. In rats, subdermal silastic capsule implantation of CA caused functional impairment of the epididymis, thus interfering with the motility and fertilizing ability of spermatozoa[2,3]. The androgen antagonistic nature of CA has been investigated in a non-human primate model (*Presbytis entellus entellus* Dufresne) for the development of an ideal contraceptive for human males. The adult male langurs were acclimatized to laboratory conditions before use. The animals were fed with wheat chapatty (unleavened bread), banana, carrot, onion, potato, guava and soaked bengal gram, and were provided with water ad libitum. 15 male langurs were used and divided into groups of 3 each, as follows:

Group A: controls receiving 5 ml of olive oil on alternate days for 40 days.
Group B: CA (15 mg/kg b.wt i.m.) 3 times a week for a period of 40 days.
Group C: castration. Bilateral castration was achieved through the scrotal route keeping epididymides in situ.
Group D: castration + testosterone propionate. After 10 days of castration 10 mg TP was administered s.c. on alternate days for 30 days.
Group E: castration + CA + TP. After 10 days of castration, animals received 200 mg CA and 10 mg TP/alternate days for a period of 30 days.
Epididymides (groups A-E) were removed surgically under Nembutal anesthesia, cleared of connective tissue and

Changes in epididymis weight and histological measurements after CA treatment, castration, castration + TP and CA in male langur

| Group | Treatment | No. of animals | Absolute epididymis weight (g) | Luminal epithelial cell height (μm) | | |
|---|---|---|---|---|---|---|
| | | | | Caput | Corpus | Cauda |
| A | Control | 3 | $0.66 \pm 0.2$ | $86.5 \pm 5.3$ | $86.3 \pm 8.4$ | $92.3 \pm 6.4$ |
| B | CA (15 mg/kg on alternate days for 40 days) | 3 | $0.36 \pm 0.1^{b}$ | $36.6 \pm 3.4^{c}$ | $42.6 \pm 4.0^{c}$ | $35.2 \pm 5.3^{c}$ |
| C | Castration | 3 | $0.26 \pm 0.1^{c}$ | $20.8 \pm 2.3^{c}$ | $54.3 \pm 2.9^{c}$ | $52.5 \pm 3.3^{c}$ |
| D | Castration + TP | 3 | $0.94 \pm 0.2^{a,***}$ | $70.6 \pm 5.1^{c,***}$ | $92.4 \pm 5.8^{a,***}$ | $83.9 \pm 4.8^{a,***}$ |
| E | Castration + TP + CA | 3 | $0.45 \pm 0.1^{A,*}$ | $32.79 \pm 4.4^{B,**}$ | $50.03 \pm 2.8^{B,*}$ | $56.05 \pm 3.1^{B,*}$ |

1. CA treatment (B), castration (C) and castration + TP (D) compared with controls (A): [a]Nonsignificant; [b]significant at 5% level; [c]significant at 1% level.
2. Castration + TP (D) and castration + CA + TP (E) compared with castrates (C): *Nonsignificant; **significant at 5% level; ***significant at 1% level.
3. Castration + CA + TP (E) compared with castration + TP (D): [A]Significant at 5% level; [B]significant at 1% level.