Effect of 1000 & 10000 Potencies of Pulsatilla (A Homoeopathic Drug) on Ovaries, Uterii and Arcuate Neurons in Albino Rats*

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SUMMARY

Pulsatilla (1000 Potency) brought about progesterone prone results—1. Weight decrease in ovaries and uterii 2. Follicular atresia, and 3. Size reduction of corpora lutea, luminal epithelium and nuclei of arcuate neurons. But 10000 potency showed estrogenic affinities-increase in uterine weight and volume of nuclei of arcuate neurons.

INTRODUCTION

Currently, much emphasis is laid on the well being of the child. It is relevant here to quote an excerpt from Centre Calling "population pressures are indeed hampering the efforts to improve the lots of the children. The resources get sub-divided and it becomes difficult to provide the needed amenities to the child in a large family. Whatever, we might, therefore do for our children will at best have marginal value, or benefit some pockets, unless we make the one meaningful contribution—a curtailment of births, that alone will result in children being considered as precious as they should be."

If this is so, then family planning is imperative. Therefore, more and more researches are being directed towards finding cheap and easily acceptable contraceptives. Considerable data exists pertaining to this field, still a satisfactory solution seems distant. Laumas et al[1] state "not much is known about the precise mode of action of progestatronal steroids and more so about the parent compound, progesterone."

The existance of such lacunae led to the present probe. Further preliminary studies in this laboratory have shown that Pulsatilla in its 30 and 200 potencies have progesterone like properties (Chandrasekhar and Prasad[2], Prasad and Chandrasekhar[2]) as evidenced by its action on the uterus and the vaginal smears. Therefore, it was felt that an "indepth" study using Pulsatilla in its 1000 and 10000 potencies would yield useful and desired results. Therefore, studies on the drug's effect on the ovaries, uterii and arcuate neurons are undertaken.

MATERIALS AND METHODS

Female albino rats of HM strain weighing 100 ± 10 gms. formed the material for this study. During acclimatisa-

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tion as well as throughout the period of experimentation, they were kept under congenial animal husbandry conditions. Food and water were allowed *ad libitum* and were kept under 12 hrs. light/dark.

Rats showing regular estrous cycles were divided into 2 main groups.

Group A—Treatment commenced at proestrus
- Sub group a—alcohol treated control
- Sub group b—1000 potency treated } Experimentals
- Sub group c—10000 potency treated } Experimentals

Group B—Treatment commenced at oestrus
- Sub group a—alcohol treated controls
- Sub group b—1000 potency treated } Experimentals
- Sub group c—10000 potency treated } Experimentals

The drug and vehicle were orally administered; sacrifices were made :

1. One day after drug administration
2. 5 days after drug administration (to this group the drug was administered for 5 successive days continuously prior to sacrificing).

From decapitated rats, ovaries, uterii and brains were removed and fixed in Bouin's fixative after recording their weights. Serial paraffin sections of ovaries, uterii and brains were prepared and stained in HE.

RESULTS

I. OVARY : Pulsatilla 1000 and 10000 potencies decreased ovarian weight as compared to controls, (Fig. 1) increased the number of atretic follicles (Fig. 2) arrested the formation of corpora lutea (Fig. 3).

There was an uniform decrease in the diameter of corpora lutea in experimental animals (Fig. 4).

2. UTERUS : A noticeable reduction was observed in uterine weights in rats treated with 1000 potency during proestrus, the same potency administered at oestrus and continued for 5 successive days, brought in an increase in uterine weight. 10000 potency decreased uterine weight after a day's treatment. On the other hand, continuous treatment for 5 successive days starting with proestrus and running through the oestrus cycle increased the uterine weight. (Fig. 5).

1000 and 10000 potencies of Pulsatilla administered during proestrus brought about a significant reduction in the height of luminal epithelial cells. (Fig. 6). It needs to be emphasised that mitotic activity in luminal epithelial cells and endometrial height were reduced in treated rats as compared to the controls. But the rats treated for 5 successive days commencing from oestrus showed broader endometrium. (Fig. 7).

3. VOLUME OF NEURONS OF ARCUATE NUCLEUS (Fig. 8). 1000 Potency administered during proestrus increased nuclear volume. But drug given during oestrus brought about significant reduction in their volumes. 10000 potency administered during proestrus brought about a significant increase in the volume of neurons after 5 days. Drug administered during oestrus reduced neuronal volume after a day's treatment while it brought about an enlargement after 5 days.

4. VOLUME OF NUCLEI OF NEURONS OF ARCUATE NUCLEUS (Fig. 9). 1000 potency brought about enlargement of nuclei after 24 hrs., whereas reduction was observed after 5 days. Drug administered during oestrus reduced nuclear sizes beginning from 24 hrs. through 5 days of treatment.

10000 potency administered during proestrus and oestrus enlarged the nuclear volumes steadily starting from day 1 through 5 days of treatment.

DISCUSSION

A comparison of the results obtained in the present investigation with the existing data (Hoffmann and Schwartz[4], Smith[5]) brings out clearly that Pulsatilla in its 1000 potency possesses progesterone like properties, because it brought about the reduction in ovarian and uterine weights, size of corpora lutea, luminal epithelium and volume of nuclei of arcuate neurons. This is supported by the findings of Chandrasekhar et al[6] and Prasad and Chandrasekhar[7] who observed Pulsatilla to reduce height of luminal epithelium and the number of corpora lutea, which are characterstic actions of progestational compounds.

Atresia of follicles in mature mammalian ovary is either due to lack of proper gonadotrophic stimulation (Guraya and Greenwald[8]) or due to hormonal imbalance. The observations in the present probe are in agreement with the recorded findings, because a number of follicles especially those in advanced stage of development were found to be degenerating. This may be postulated as due to the drug's interference with the action of the FSH at the level of the pituitary or locally in the ovary itself (Prasad and Chandrasekhar)[3]. Further, it is known that progesterone suppresses ovulation and follicular growth either by inhibiting gonadotropic secretion or its release (Piva et al[9]).

In the present experiment Pulsatilla was found to inhibit the formation of corpora lutea and also reduce the size of those which were developing, causing reduction in ovarian weight, which is yet another proof of its progestational properties. The decrease in ovarian weight may be due to the quantitative decrease in luteal tissue (Hoffmann and Schwartz[4]).

In the present experimentation, the neuronal components, of arcute nucleus showed a steady size increase from 1st to 5th day of experimentation (treated with 1000 potency of Pulsatilla). This may be because the drug in its 1000 potency brings about a dual reaction. Firstly, it suppresses growth of follicles, secondly, it brings about the progestational changes in the uterus, the former minimises the estrogen production (Nalbandov[10], Turner and Bagnara[11]). Lack of endogenous estrogen may be the cause of the nuclear neuronal hypertrophy. This argues well with the findings of Szentagothai et al[12])

In conclusion, it may be said that Pulsatilla in its 1000 potency possesses progesterone like properties, because, it decreases uterine weight, increases the number of atretic follicles, reduces (i) ovarian weight, (ii) number and diameter of corpora lutea and (iii) volume of nuclei of arcuate neurons. On the contrary, Pulsatilla 10000 brings about changes in uterii and arcuate neurons suggestive of its estrogenic affinities.

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LEGENDS

Histograms showing the effect of 1000 and 10000 potencies of Pulsatilla on Uterii, Ovaries and Arcuate neurones :

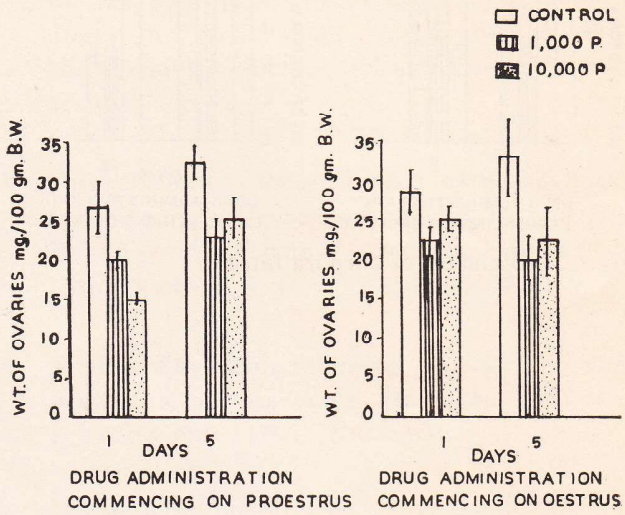

Fig. 1. Ovarian weight (mgm/100 gm of body weight)

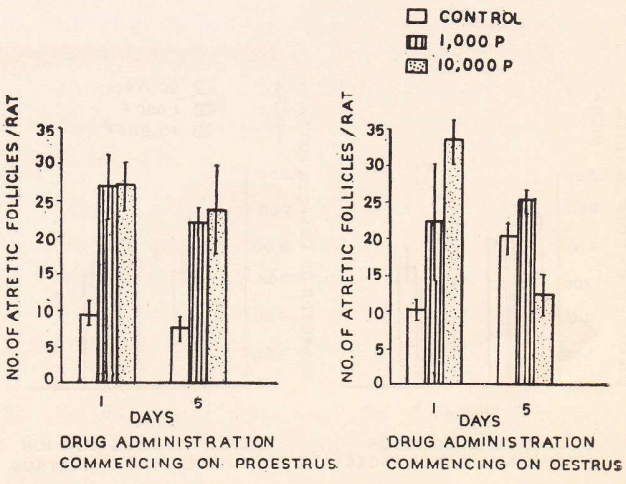

Fig. 2. Number of atretic follicles

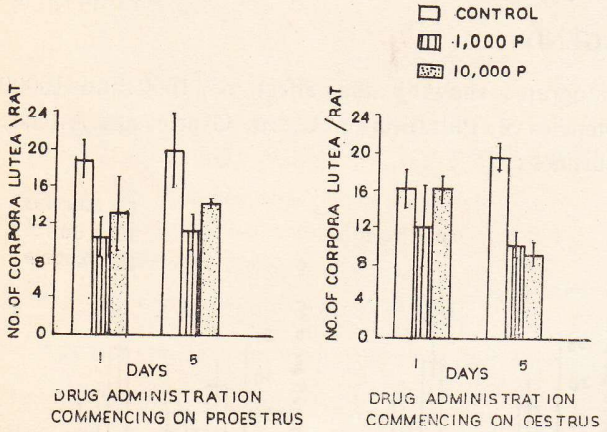

Fig. 3. Diameter of corpora lutea

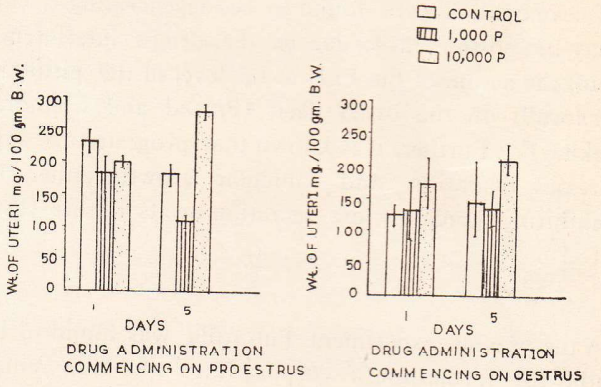

Fig. 5. Uterine weight (mgm/100 gm. of body weight)

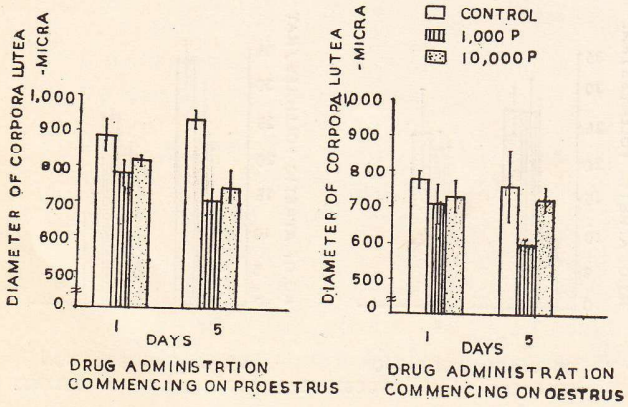

Fig. 4. Diameter of Corpora Lutea

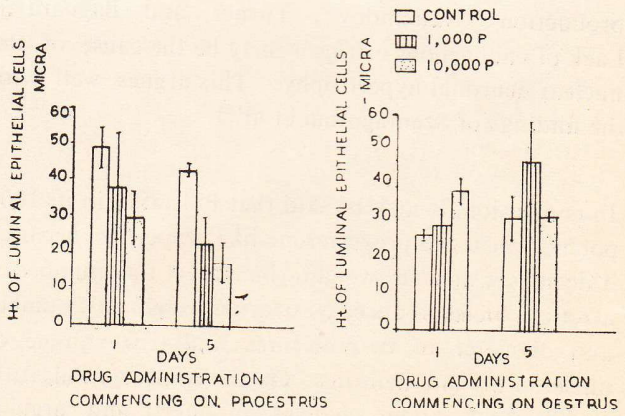

Fig. 6. Height of luminal epithelial cells

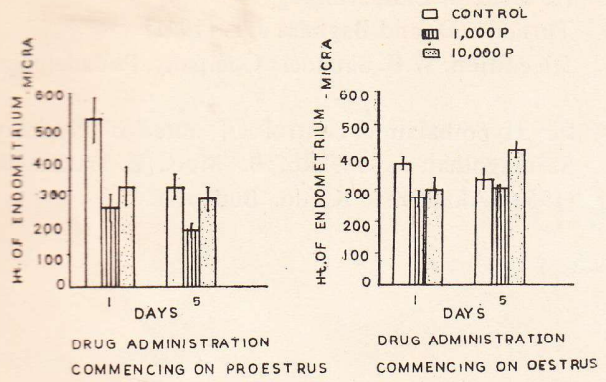

Fig. 7. Height of endometrium

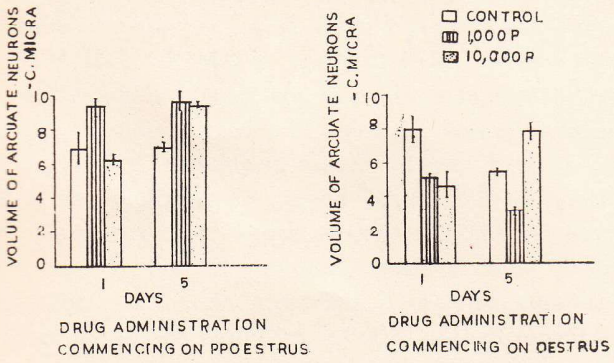

Fig. 8. Volume of neurons of arcuate nucleus

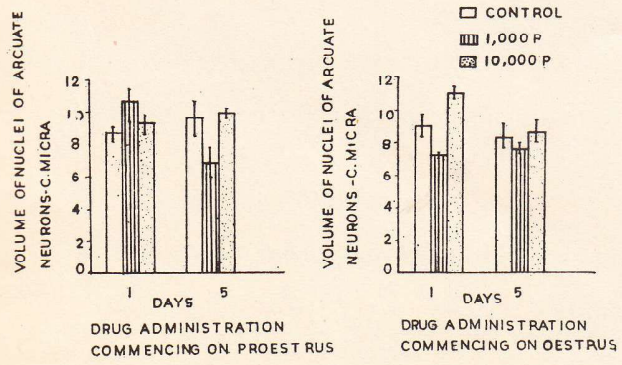

Fig. 9. Volume of nuclei of arcuate neurons.

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