

**COMPARATIVE STUDY BETWEEN CYTO-
HISTOCHEMICAL STAINING OF ENDOMETRIAL
GLYCOGEN AND SERUM PROGESTERONE ASSAY
IN THE DIAGNOSIS OF OVULATION**

Thesis

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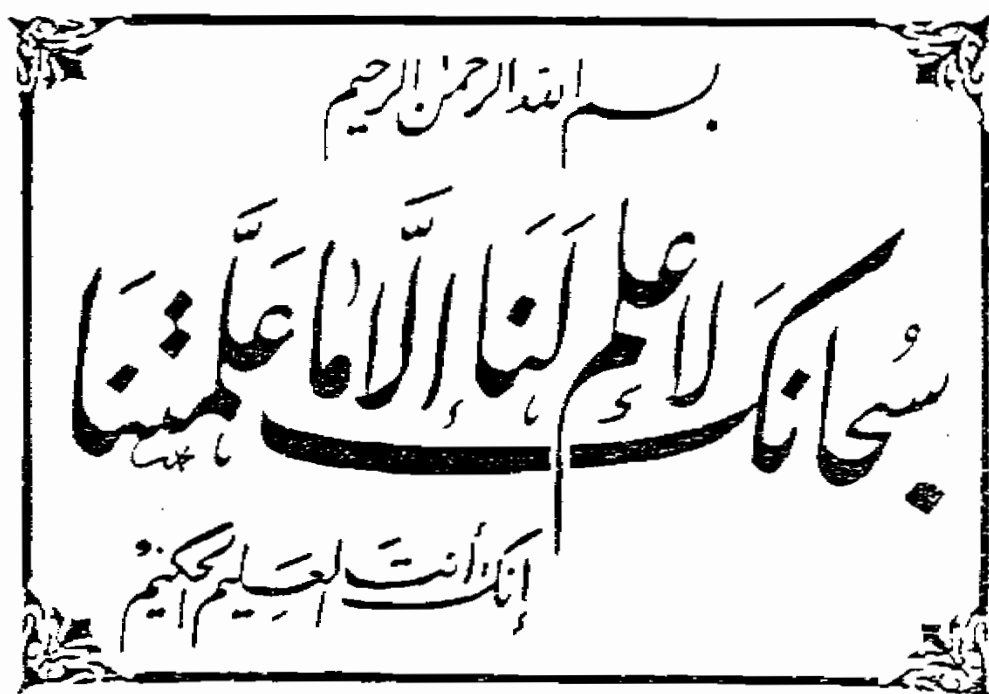
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سورة البقرة .. آية ٣٢



TO...

My Family

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ABBREVIATION

E2	Estradiol
FSH	Follicular stimulating hormone
GnRH	Gonadotropin releasing hormone
Hr	Hour
Hx	Haematoxylin
LH	Luteinizing hormone
LHRH	Luteinizing hormone realizing hormone
P	Progesterone
PAS	Periodic acid and schiff's reaction
PDG	Pregnandiol-3-glucuronide
POD	Postovulatory day
RIA	Radioimmunoassay

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INTRODUCTION

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The hallmark of the menstrual cycle is ovulation. Historically documentation of ovulation has been by a variety of indirect or symptomatological criteria. In 1930 Ogino reported the so called a rhythm method of ovulation prediction concluding that regardless of cycle length, ovulation occurred between the 12th to 16th day before the next menstruation. As early as 1933 Seguy and Vimeux observed that between days 10 and 15 of the menstrual cycle, the cervical mucus increased in volume and decreased in viscosity, Seguy and Simonet (1933) subsequently related cervical mucus changes to increasing levels of urinary estrogen (*Albertson and Zinaman, 1987*). Approximately a decade later a number of medical observations pointed out that the BBT rose and remained elevated until just before menstruation (*Vollman, 1977*).

In 1937 Rock and Bartlett attempted to ascertain the condition of the ovaries by studying the endometrium and they hypothesized that the morphologic changes in epithelium and stroma of the normal endometrium would allow to appraise corpus luteum function. In 1950 Noyes et al. described histologic criteria used up till now in dating of endometrium (*Merrill, 1991*).

In the early 1970's Billings and associates described their method of ovulation prediction, it was based on the proposition that a woman's fertility is accompanied by secretion of a distinct type of mucus produced by columnar epithelial cells present in the crypts of the endocervix. It has been postulated that mucous changes can be easily recognized by the majority of women (*Billings et al., 1972*).

The need to accurately predict ovulation in women stems from two concerns, one to optimize the chance of fertilization when offspring are desired. Thus, sexual intercourse timed at or very near to ovulation greatly increases a woman's chances to become pregnant. The second is for reasons of contraception (*Albertson and Zinaman, 1987*).

The development of specific assays for reproductive hormones in the female allowed scientists and clinicians to measure them in blood as well as body secretions like urine and saliva, thus ovulation can be accurately dated. Recently, however, the cost of many of these assays and the potential adverse effect of specific assay reagents on humans and the environment have stimulated investigator to devise sensitive, specific, reliable methods like accurately measuring BBT and

specific hormones in easily obtainable biologic fluids (*Alberston, 1990*).

Also, these measurements require sophisticated laboratory techniques not available to all women (*Albertson and Zinaman, 1987*).

The accumulation of glycogen particles in the glandular epithelium is the first histological sign of ovulation, this is due to the effect of progesterone hormone on the endometrium which appears 24 to 48 hours after LH surge (*Cornillie et al., 1988*). Progesterone stimulates glycogen synthesis due to increase in the glycogen synthetase activity. It exhibits maximal activity from the 16th to 23th day of the menstrual cycle (*Ishihara et al., 1988*). Endometrial cells could be obtained by cytology sampling which is a simple office procedure with minimal discomfort to the patient and the cost is low both in money and time.

AIM OF THE WORK

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The aim of this work was to study the value of glycogen detection in the endometrium as a test for diagnosis of ovulation using specific stains for glycogen.

REVIEW OF LITERATURE

OVULATION

Ovulation, that is, the time at which one or more mature graafian follicles rupture and release into the fimbria of the fallopian tubes (*Alberston and Zinaman, 1987*). The majority of the signs and symptoms of ovulation are a reflection of the hormonal changes that are involved in the ovulatory process. It is therefore important to discuss the events of menstrual cycle before discussing methods of detection of ovulation.

The endocrine control of ovulation involves an interaction between the hypothalamus, pituitary and ovaries in the last few days of the preceding menstrual cycle, the decline of steroidogenesis allows for a rise in FSH which rescues a group of follicles from atresia (*Vermesh and Ketzky, 1987*). However, the initiation of follicular growth appears to be independent of gonadotropin stimulation (*Speroff et al., 1989*).

During early pre-ovulatory days of the new menstrual cycle, one of the developing follicles, for reasons that are unknown become dominant and continues to grow to full maturation and then ruptures while the remainder become atretic (*France, 1982*).
