

# Importance of Luteal Phase in Regulating Reproductive Health of Prolactin in IVF Treatment

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## ABOUT THE STUDY

The luteal phase, an important stage in the menstrual cycle, plays a vital role in regulating reproductive health. Approximately in 14 days duration, this phase follows ovulation and is characterized by the formation of the corpus luteum, a temporary endocrine structure. The luteal phase is involved in preparing the uterine lining for potential embryo implantation. Sufficient duration and functionality of this phase are important for maintaining hormonal balance, ensuring embryo support, and facilitating successful pregnancies. Any disturbances in the luteal phase can affect fertility, leading to challenges in conception and overall reproductive health. Prolactin, produced by the pituitary gland in the brain, is traditionally recognized for its role in lactation and breastfeeding. However, its impact extends beyond the postpartum period, including various aspects of reproductive health.

## Regulation of reproductive function

Prolactin interacts with other hormones, such as gonadotropins (Luteinizing Hormone-LH and Follicle Stimulating Hormone-FSH), to regulate the menstrual cycle and ovulation. While prolactin levels naturally rise during pregnancy and lactation, maintaining a suitable balance is important for normal reproductive function. Higher levels of prolactin can suppress ovulation, leading to irregular menstrual cycles or even amenorrhea (absence of menstruation). Prolactin contributes to the luteal phase, the second half of the menstrual cycle following ovulation. It supports the corpus luteum, a temporary structure formed in the ovary after ovulation, which produces progesterone. Sufficient progesterone levels are important for preparing the uterine lining for embryo implantation during *In Vitro* Fertilization (IVF).

**Prolactin and infertility:** Hyperprolactinemia, a condition characterized by higher levels of prolactin, can pose challenges to

fertility. Excessive prolactin levels may disrupt the delicate hormonal balance necessary for normal reproductive function. In women, this can lead to irregular ovulation or anovulation, contributing to difficulties in achieving pregnancy.

**Ovulatory disorders:** Higher prolactin levels are often associated with ovulatory disorders, such as Polycystic Ovary Syndrome (PCOS). In such cases, the irregular release of eggs during the menstrual cycle can hinder natural conception and complicate the IVF process.

**Impact on male fertility:** Prolactin is not exclusive to female reproductive health; it also plays a role in male fertility. Increased levels of prolactin in men can lead to decreased testosterone production and sperm count, impacting sperm quality and motility. This can affect the success of fertility treatments, including IVF.

## Role of prolactin in IVF treatment

**Screening and diagnosis:** As part of thorough evaluation of fertility, prolactin levels are regularly screened, especially in cases where irregular menstrual cycles, anovulation, or ovulatory disorders are identified. Early detection of hyperprolactinemia allows fertility specialists to modify treatment plans for best outcomes.

**Management of hyperprolactinemia:** In cases where higher prolactin levels are identified, it becomes necessary to treat the cause of the problem. The most common cause of hyperprolactinemia is a benign tumor called a prolactinoma. Medications, such as dopamine agonists, are often prescribed to lower prolactin levels and restore normal hormonal balance.

**Improving ovulation and hormonal balance:** For women undergoing IVF, reaching healthy ovulation is a primary goal. Fertility specialists carefully monitor and regulate prolactin levels

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to ensure that ovulation occurs certainly and that the timing of assisted reproductive procedures, such as egg retrieval, is improved.

**Timing of fertility treatments:** Controlling prolactin levels is important for coordinating the various stages of IVF. Timing is vital for the administration of fertility medications, observing follicular development, and scheduling procedures such as egg retrieval and embryo transfer. Prolactin management contributes to the precision and success of these stages.

**Male factor considerations:** In cases where male fertility is a contributing factor, the impact of prolactin on sperm quality is taken into account. Managing prolactin levels in men undergoing fertility treatments, including IVF with Intracytoplasmic Sperm Injection (ICSI), is important for improving overall reproductive success.

## CONCLUSION

As the field of reproductive medicine continues to progress, the role of prolactin in IVF treatment features the complex interaction of hormones in the search of successful conception. From regulating ovulation to influencing the luteal phase, prolactin's impact on both female and male fertility is major. Recognizing the challenges posed by hyperprolactinemia and addressing them with care, contribute to the success of fertility treatments. In the hands of skilled fertility specialists, the integration of prolactin management into IVF protocols is a demonstration to the personalized and comprehensive approach to reproductive care. As research progresses and technology advances, the role of prolactin in fertility treatments will continue to be advanced, offering new paths for individuals and couples on their journey to parenthood.