"GLOBAL HEALTH AND MODERN MEDICINE: INNOVATIONS AND PERSPECTIVES"
International Conference titled

Website:https://worldsiencepub.com/index.php/isngcs September edition,2026

# THE THYROID HORMONE AXIS AND FEMALE REPRODUCTION

**Mominova Nodira Abdulxayevna**
Andijan State Medical Institute, Department of Pharmacology,
Clinical Pharmacology, and Medical Biotechnology.

## Introduction

The hypothalamic-pituitary-thyroid (HPT) and hypothalamic-pituitary-gonadal (HPG) axes exhibit an integrated neuroendocrine relationship essential for female reproductive competence. Thyroid disorders represent some of the most prevalent endocrinopathies in reproductive-aged women, affecting approximately 14% of adult females. Thyroid hormones (THs) specifically triiodothyronine (T3) and thyroxine (T4)—influence the HPG axis in a pleiotropic fashion. Centrally, THs regulate hypothalamic kisspeptin and gonadotropin-releasing hormone (GnRH) neuronal activity. Peripherally, thyroid hormone receptors (THRs) are widely expressed across the reproductive tract, including within human oocytes, cumulus cells, granulosa cells, endometrium, and myometrium. Pathological deviations, such as overt and subclinical hypothyroidism, disrupt these pathways, causing menstrual irregularities, diminished ovarian reserve, and severe pregnancy complications, including preeclampsia and placental abruption.

## Material and Methods

To analyze thyroid axis function on female reproduction, a systematic literature synthesis was conducted. Electronic databases, including PubMed, Embase, and Web of Science, were searched utilizing specific keywords: "thyroid," "female reproduction," "PCOS," "pregnancy," and "hypothyroidism". Selection criteria prioritized peer-reviewed randomized controlled trials, prospective cohort studies, and epidemiological surveys examining the relationship between thyroid biomarkers (serum TSH, free T4, and anti-thyroid peroxidase [TPOAb] antibodies) and reproductive indices. Evaluated clinical endpoints included anti-Müllerian hormone (AMH) levels, ovarian antral follicle counts (AFC), endometrial decidualization response, fertilization rates, and adverse gestational outcomes.

## Results

Neuroendocrinologically, primary hypothyroidism increases TRH, promoting prolactin; this hyperprolactinemia downregulates hypothalamic *Kiss1* expression and suppresses pulsatile GnRH. Approximately 20% of subclinical hypothyroidism (SCH) patients present with elevated prolactin. Peripherally, T3 directly binds to ovarian follicular THRs, synergizing with FSH to promote granulosa cell survival and upregulate FSH receptor expression. Autoimmune thyroid disease and TPOAb positivity are strongly associated with diminished ovarian reserve (reduced AMH and AFC), independent of TSH levels. Within the uterus, T3 coordinates with estrogen and progesterone receptors to facilitate endometrial decidualization. Hypothyroidism induces a hypocoagulable state (reducing clotting factors VII, VIII, IX, and XI), clinically presenting as polymenorrhea or hypermenorrhea, whereas hyperthyroidism produces a hypercoagulable state often linked to oligomenorrhea. Overt hypothyroidism elevates preeclampsia, placental abruption, and preterm delivery risks. However, the TABLET and POSTAL randomized controlled trials demonstrated that levothyroxine supplementation in euthyroid, TPOAb-positive women does not reduce miscarriage rates or increase live birth rates.


© 2026lobal Health and Modern Medicine: Innovations and Perspectives. All Rights Reserved.

**Conclusion**

Systemic thyroid homeostasis is fundamental to female reproductive function. Biochemical euthyroidism facilitates normal follicular development, potentiates FSH-mediated granulosa survival, and regulates endometrial decidualization and uterine contractility. Conversely, thyroid dysfunction—often compounded by autoimmune states like Hashimoto's thyroiditis—undermines reproductive success. While biochemical hypothyroxinemia directly alters tissue function, shared autoimmune linkages marked by TPOAb positivity are primary drivers of premature ovarian insufficiency and pregnancy loss. Consequently, systematic thyroid screening and personalized levothyroxine titration remain critical clinical interventions to optimize fertility and obstetric outcomes in women with suspected HPT-axis abnormalities.



© 2026lobal Health and Modern Medicine: Innovations and Perspectives. All Rights Reserved.