PolyCystic Ovary Syndrome (PCOS) model

IN VIVO LETROZOLE-INDUCED RODENT MODEL FOR POLYCYSTIC OVARY SYNDROME

Model

PolyCystic Ovary Syndrome (PCOS) is the most common hormonal disorder in women of childbearing age, affecting one in ten.
It can lead to fertility and hair disorders (hirsutism), as well as metabolic and cardiovascular complications.
It is the main cause of female infertility.
To date, there is no specific treatment for this syndrome, existing therapies being symptomatic.
This syndrome is due to a hormonal imbalance of ovarian and/or central origin. It results in excessive production of androgens, in particular testosterone, which is usually produced in small quantities in the female body.
In this model, treatment of pubertal female mice with the aromatase inhibitor letrozole resulted in the development of reproductive features of PCOS, including hyperandrogenism, anovulation and polycystic ovaries.

Interest

This model is suitable to evaluate the efficacy of anti-androgens, insulin sensitizers, ovulation inducers as well as new potential drugs.

Species

- Mouse
- Rat

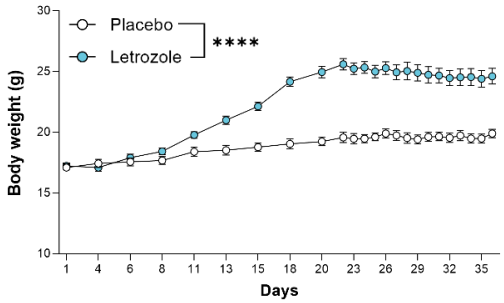
Model Description

- Subcutaneous implantation of letrozole pellets
- Standard protocol duration: 3 to 5 weeks
- Pathophysiological features: overweight, dysfunctional estrous cycles, polycystic ovaries …

Parameters evaluated

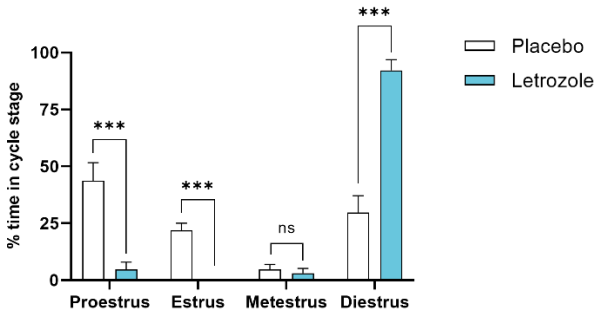
- Body weight
- Estrous cycle stage determination on crystal violet-stained vaginal smear slides
- Hormonal profile: determination of circulating testosterone and Luteinizing Hormone (LH) levels by immunoassays
- Ovary weight
- Ovarian morphology: histopathological evaluation including counting of ovarian structures/follicles on hematoxylin/eosin (HE)-stained ovarian sections.

Body weight gain in PCOS mice



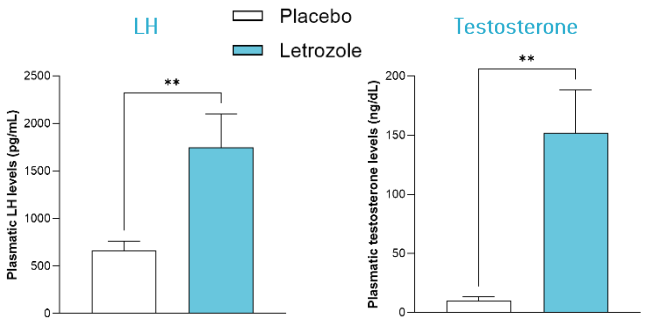
**** P<0.0001 (n=8/group)

Estrous cycle dysfunction in PCOS mice



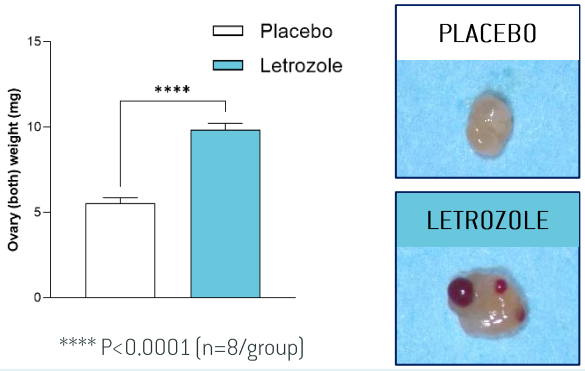
ns P> 0.05 , *** P< 0.001 (n=8/group)

Increased plasma LH and testosterone levels in PCOS mice



** P<0.01 (n=8/group)

Ovarian morphological changes in PCOS mice



**** P<0.0001 (n=8/group)