

## The ovarian renin-angiotensin system

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The presence of a complete OVRAS in all studied species has been known for decades. The OVRAS plays major roles in follicle development/atresia, ovulation and ovarian steroid hormone secretion, i.e. the gamut of female reproduction. OVRAS' activity is regulated by pituitary and placental gonadotropins, largely through the action of plasminogen activation inhibitor (PAI).

Angiotensin and angiotensin receptors are widely distributed in the ovarian follicle, follicle fluid, preovulatory theca and granulosa cells, and postovulatory mural granulosa-lutein cells. Angiotensin regulate steroidogenesis and causes contraction of myofibrillar cells around the preovulatory follicle at ovulation.

Molecular blockade of the OVRAS inhibits oocyte maturation and ovulation.

Abnormal OVRAS function has been associated with infertility, polycystic ovarian syndrome (PCOS), ovarian hyperstimulation syndrome (OHSS), and ovarian cancer. Both hyperandrogenism in PCOS and third space fluid accumulation in OHSS have been convincingly linked to overexpression of renin and angiotensin. Blockade of angiotensin receptors is under study for the treatment of gynecologic cancer, OHSS, and PCOS

A full understanding of the OVRAS and translational applications is lacking. In part, this is due to the discovery in recent years of previously unknown renin–angiotensin system (RAS) components and novel functions of “classical” RAS components that remain to be integrated into translational studies of the OVRAS; newer, more specific agents to block RAS components are available only now for such research and treatment. The need for further studies is evident.

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