

## ABSTRACT

Melatonin is an excellent free radical scavenger and has been proven to ease the symptoms associated with polycystic ovarian syndrome. Many women of reproductive age develop ovarian issues such as corpus luteum cysts, which most commonly stem from problems in ovarian function. Our goal is to determine whether melatonin can be used as an alternative prevention method for corpus luteum cysts, along with other ovarian issues.

## OBJECTIVE

Investigate the effect of melatonin in a sample of female spiny mice

## BACKGROUND

Melatonin-

- Maintains the body's natural circadian rhythm
- Excellent free radical scavenger
- Aids in immune response
- Produced in different areas throughout the body with specialized local effect (ex; ovary)

Many women in their reproductive years develop issues such as polycystic ovarian syndrome and ovarian cysts. These issues most commonly stem from problems in ovarian function

Corpus Luteum Cysts form due to issues in corpus luteum development in preovulatory follicles after ovulation.

Ovulation is the process in which a graafian follicle ruptures and violently ejects an oocyte. This process has been compared to an inflammatory reaction due to its somewhat aggressive nature.

Increase in free radicals leads to increased oxidative stress which results in the degradation of the follicular wall to let the oocyte free.

It is thought that the oocyte cells produce melatonin because of its free radical scavenging and antioxidant properties.

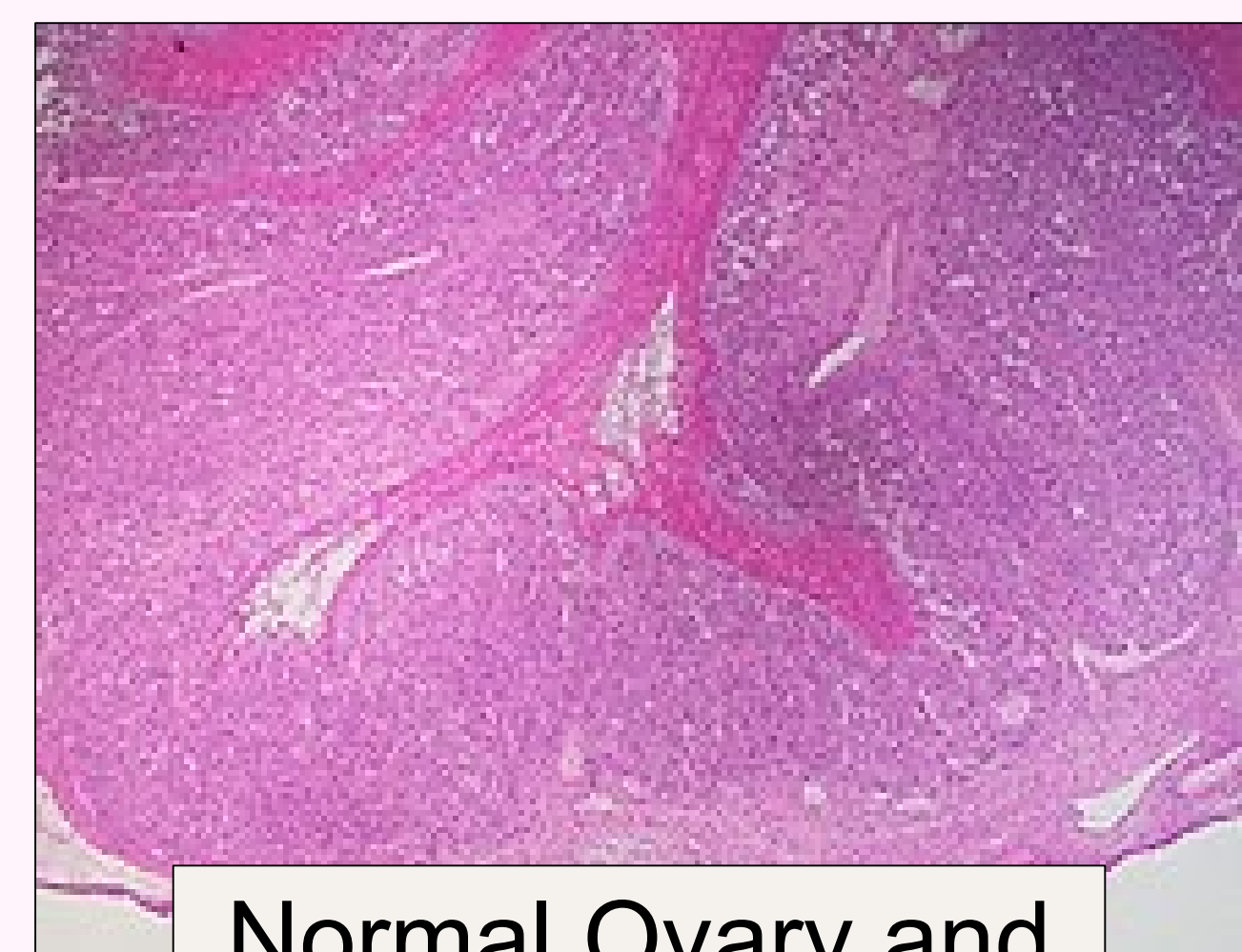
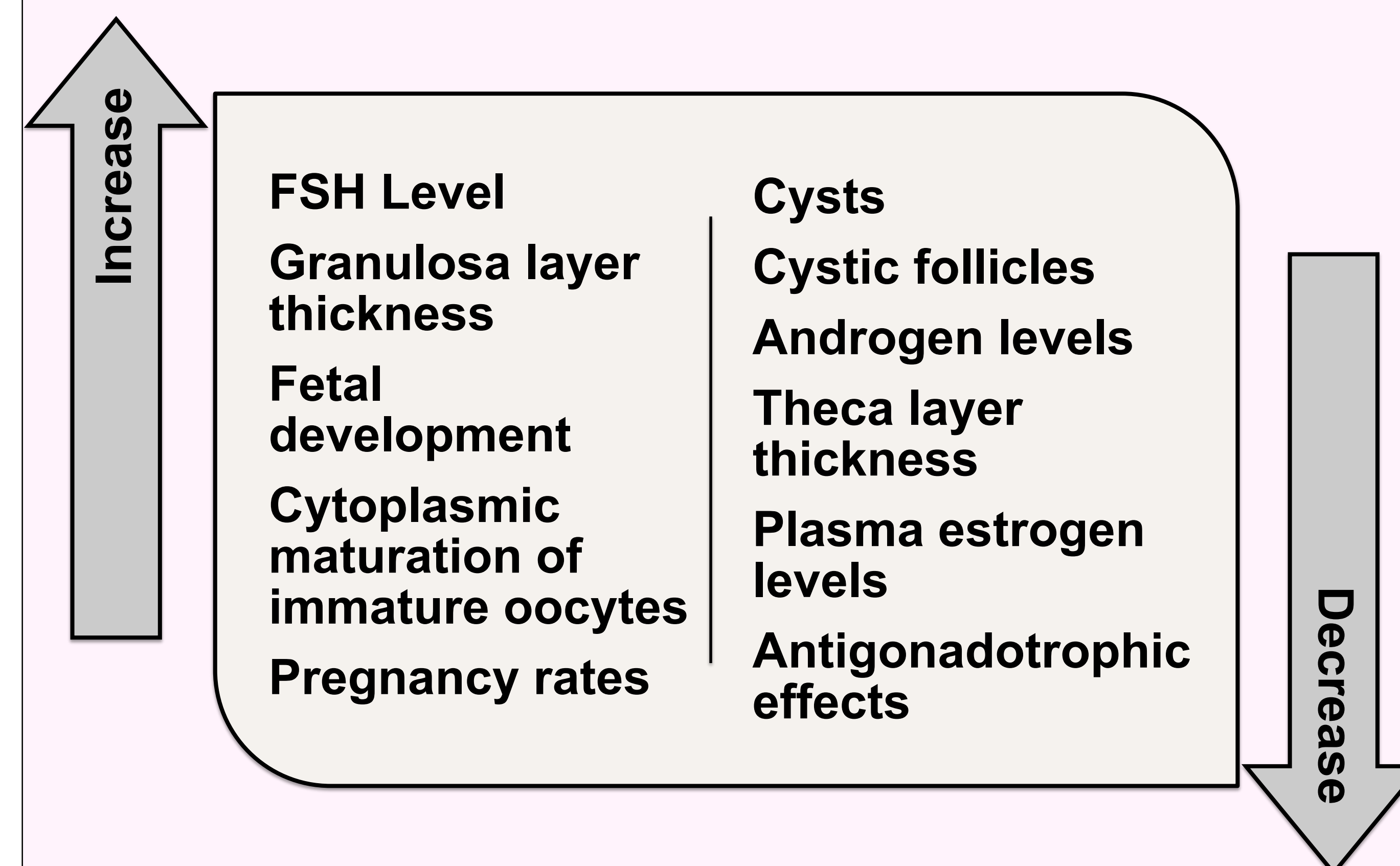
## PREVIOUS RESEARCH

Levels of melatonin are higher in follicular fluid than in the blood, and as ovarian follicles become more mature, the concentration increases.

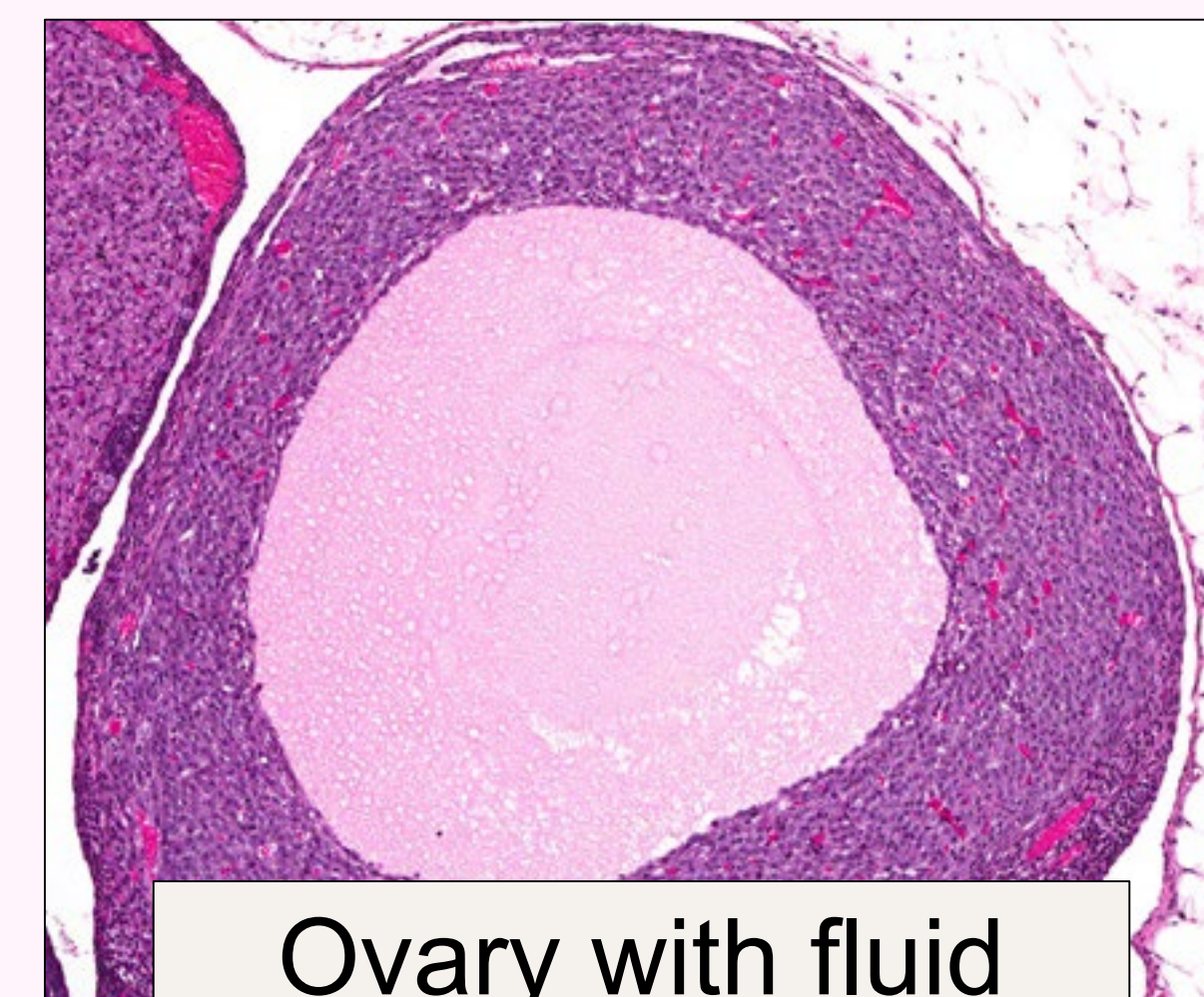
Women with Polycystic Ovarian Syndrome are known to have lower levels of melatonin concentration in follicular fluid because of the reduced circulation of melatonin and an increase in degenerative follicles.

Melatonin in the follicles of a preovulatory ovary have higher concentrations than plasma, which suggests that it may affect ovarian function in some way.

## WOMEN WITH PCOS TREATED WITH MELATONIN



Normal Ovary and  
Corpus Luteum



Ovary with fluid  
filled Corpus  
Luteum Cyst

## PROPOSED RESEARCH

Female Spiny Mice- close resemblance between their reproductive system and humans.

Experiment Duration: 5 years

Each mouse will be tested via ultrasound at least twice in every nine-day period, preferably after ovulation concludes and right before menses begins.

This is because corpus luteum cysts usually develop between this time.

Control group: Normal diet, no melatonin

Test group: Normal diet, with melatonin

Data Collection:

- Number of cysts that form
- Cyst size
- Time it takes for cyst to regress
- Offspring produced

## EXPECTED RESULTS

We expect to see a decrease in the number of cystic follicles and cysts that develop

## DISCUSSION

Melatonin proven to reduce the number of cysts formed in Polycystic Ovary Syndrome

Because of the similarities between the development of Corpus Luteum cysts and Polycystic Cystic Ovaries, Melatonin may be able to prevent corpus luteum cysts as well.

If this research is successful, we may be able to develop a safe and effective method to prevent Corpus Luteum Cysts cysts that does not involve stopping ovulation.

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