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Writing Assignment #4

Molecular regulation of polycystic ovary syndrome: altered gene expression levels in mouse models pretreatment and post-treatment

This primary article looked at Polycystic ovary syndrome (PCOS). Which is a complex disorder and genetic factors are believed to play a role in this genetic disorder. The main aim of this article was to investigate expression levels of genes involved in PI3K/AKT signaling pathway pretreatment and post-treatment.

The way they did this was by using mouse models of PCOS that they generated. They used four different groups of mice in their experiments. Group one was the control group which had no polycystic ovaries, group two had a PCOS mouse model, group three included PCOS mice which were treated with clomiphene citrate, and group four had mice with PCOS and the mice were treated with clomiphene citrate, metformin and pioglitazone. Clomiphene citrate is a medication that is used to treat infertility in women, this medication works similarly to estrogen. Metformin and pioglitazone can also be used to increase ovulation rate.

Histochemical analyses were performed, and data was collected. Total RNA was extracted, and the cDNA was synthesized. *Irs*, *Akt1* and *Akt2*, *mTor* and *Pdpk1* gene expression levels were looked at by RT-PCR (reverse transcription-polymerase chain reaction) amplification. These were the results for each group. Group one's cortex and medulla were evaluated as normal this group was the control group so that was to be expected, group two ovarian cortex was composed of immature oocytes and cystic follicles with atretic follicles, group three and four's follicles had process of normal follicle differentiation.

The results of this article seemed to show that follicular development could be regulated by molecular pathways which involved *Pi3k*, *Akt1* and *mTor* expression. If this is the case, genes in the PI3K/AKT pathway could have a regulatory role in the development of PCOS.

Works cited

Tulay P, Onal T, Vatansever S. Molecular regulation of polycystic ovary syndrome: altered gene expression levels in mouse models pretreatment and post-treatment. *Zygote*; <https://doi.org/10.1017/S0967199421000769> (2021).