

Good research proposal about insulin effect on tetrahymena



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Background

Tetrahymena is a unicellular ciliate that has always been the main model of studying the hormonal system of all the unicellular animals. Tetrahymena functions by, producing, storage, and the uptake of insulin that is a hormone that is similar to that of the mammals. It functions as an immunocytochemical and the functionality. The plasma membrane and the nuclear envelope of Tetrahymena have insulin receptors that are similar to that of mammal receptors and act as their binding capacities. The cells also have a second messenger and some signal pathway for the insulin. This insulin also influences the formation of other hormones. When there is an encounter between the cell and insulin it provokes the imprinting of hormones that always interferes with the cell functioning and this is carried on to the progeny and always persists to 1000 generations. This is in the following functionality, Hormone binding, the hormonal content, phagocytosis and finally the growth of cells and their movements. These experiments done about the insulin effect in Tetrahymena are important in that they help us to understand and appreciate the role hormone insulin plays in these unicellular microorganisms. The research is also very important as it helps us to understand the effect of the functionality of these cells that arises from insulin. The unanswered question about this topic is that there have not been a structural study to identify the of Tetrahymena insulin. However, the use of immunological similarities to that of the mammalian insulin and the function makes it to be identified as insulin in nature and that it belongs to a particular insulin family which nobody has been being able to identify

Preliminary results

The insulin control the highest number of beads at all time from zero minutes to 1 hour. The one that had insulin treatments always had a lower number of beads consumed at all the times. This is because the controlled cells had insulin already in them hence they started influencing the cell functioning in phagocytosis. It was higher in its reahighestcompared to the treated cells which had to be imprinted . If insulin. The control cells always had insulin clumps in there Celia hence they consumed more beds at each given time interval.

The question that these experiments are trying to answer is What are the differences between the insulin that is treated and the untreated Tetrahymena behavior when they are feeding and to their general motilities. This experiment always leads us to two major hypotheses and these hypotheses are : The cells that are treated with insulin will be highly motile as compared to those that are not treated. The treated tetrahymena will also consume more beads as compared to those in the control experiments. The swimming speed in treated was always higher than the swimming speed of the treatments. This was because the cells were diluted with fold until it was easy to perform the assay. This dilution interferes with the insulin contents of the control. The insulin content in the control was very low and as a result the treated cells to insulin.

Summary of the experiments

Insulin also has an effect on the motility of the Tetrahymena. The more the cells were being imprinted with insulin the slower their speed hence they covered a small path. So from this we can say when insulin levels in the cells

of the tetrahymena the less distance they cover and hence the lower their speed in swimming.

Rationale for these experiments

The reason for doing this experiment is to determine how the different levels of insulin in the body of the Tetrahymena affect the functionality of their cells. The levels of insulin in the cells affect functionality such as phagocytes, the growth of cells and their movements. The question that these experiments are trying to answer is how different concentrations of insulin affect the functioning of cells.

The experiments

Phagocytosis assay

There are three samples which are taken for the control experiment. These are thirty minutes, five minutes and 60 minutes intervals. A number of 50 cells are chosen at a random and the amount of beads inside each cell are counted and averaged. The averaging of this increases the accuracy of the experiments.

Results

The number of beads in the insulin treated were very high in the three intervals as compared to in the control. That is the treated insulin consumed more beads as compared to the control experiment. From the three intervals in both the five minute interval had the smallest number of beads consumed followed by the thirty minute interval and finally in both the experiment the 60 minute interval had the highest number of beads consumed.

Discussion

Insulin always has a phagocytosis stimulating influence. The more the cells are treated with the insulin the more the phagocytosis influence increases. From this we can come to a conclusion that the number of beads consumed increased with the increase in time interval and treatments that were being conducted on cells. The treated cells had more insulin as compared to the controls hence they consumed more beads.

Cell motility Assay

First the cells are diluted in 2500 fold units so as to enable it to be easy to perform an assay. Then the experimental groups are treated with insulin in one two time intervals. This interval is thirty minutes and one hour before the performing of the motility assay.

Results

Discussion

Insulin has an effect on the motility speed of tetrahymena. The more the insulin levels in their cells the less speed this cell will swim. The treated insulin cells have more insulin hence they move slower as compared with the controls which have less insulin hence they move fast.

Reciliation assay

This is an experiment that is done to determine the speed of the cilia by treating the cells with an insulin and comparing it with the control experiment. The treated cells have a high cilia growth as compared to the control. This shows that the more the insulin in the cells of the tetrahymena the higher the growth of the cillia.

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Expected result

The cells that are treated with insulin are expected to have a high growth off cilia than the control cells. This is because the insulin level when they are high they facilitate the growth of the cilia cells.

Conclusion

Works Cited

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