

SYNOPSIS OF THE PROJECT UGC MINOR RESEARCH GRANT

1. NAME AND ADDRESS OF THE PRINCIPAL INVESTIGATOR:

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2. NAME AND ADDRESS OF THE INSTITUTION :

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3. UNIVERSTIY APPROVAL NO. AND DATE :

MRP(S)-773/10-11/KAMA002/UGC-SWRO KAMA002, 22nd December, 2010

4. DATE OF IMPLEMENTATION ...10th June 2011...

5. TENURE OF THE PROJECT2yrs.....

6. TOTAL GRANT ALLOCATED ...150000/-Rs.....

7. TOTAL GRANT RECEIVED92000/Rs.....

8. FINAL EXPENDITURE160241.05.....

9. TITLE OF THE PROJECT ... Studies on the effect of Avocado extract on lipid metabolism on Murine model system...

10. OBJECTIVES OF THE PROJECT:

- To Maintain and induce hypercholestermia to the Wistar rats through diet in Animal house.
- To test the effect of hypercholesteremic diet on body weight & biochemical parameters of blood.
- To prepare the Avocado plant extract.
- To check the effect of insulin on skeletal muscle.
- Explant culture of skeletal muscle tissue
- To check the effect of insulin mimicking action of Avocado extract

- To check the insulin sensitizing effect of Avocado extract on obese rat skeletal muscle.

11. ACHIEVEMENTS FROM THE PROJECT:

We could study the effect of dietary cholesterol on young & adult rats. In adult rats, dietary cholesterol increases blood cholesterol, decreases HDL-C, increases visceral fat and also insulin sensitive tissue such as muscle shows decreased response towards insulin. This may stimulate pancreas to release more insulin to maintain blood glucose homeostasis. Our experiments also helped to understand role of avocado extract.

12. SUMMARY OF THE FINDINGS

Both Avocado hexane extract & ethanolic extracts were prepared by soxhlet extraction & solvent was evaporated using flash evaporation. After noting the weight, solution of known concentration was prepared, stored in refrigerator till the use.

Our observation of old rats with cholesterol rich diet indicates increased visceral fat content in test rats. Particularly the kidney was almost buried in the accumulated fat in test rats. So, although there is no increase in weight, visceral fat accumulation drastically increased in rats fed with high cholesterol diet.

The fasting blood glucose in experimental rats (both in control & test) was within the normal range, suggests, during the course of study, the cholesterol rich diet has not induced blood glucose disturbance (Diabetes mellitus symptom) but glucose uptake study has suggested the muscle response indicates the development of insulin resistance. So, blood glucose measurement is not an early detection method to treat metabolic disturbances of Diabetes mellitus.

Our experimental data also suggests that the dietary cholesterol directly increases blood triglyceride content.

The data also indicates the hexane extract is more effective in promoting glucose uptake by skeletal muscle. So, the effect may not involve the insulin receptor signal transduction. The phyto-bioactive molecule/s of hexane extract probably acting by promoting GLUT-4 translocation by increasing intracellular Ca^{+2} concentrations similar to caffeine.

13. CONTRIBUTION TO THE SOCIETY:

Lipid-based diseases are a growing and expensive challenge to health care systems. As a population ages, chronic conditions associated with aging such as cardiovascular disease,

neurodegenerative disorders, and metabolic disorders take increasing tolls in terms of morbidity and mortality.

The experimental results of rat can be extrapolated to human health. First of all our experimental data indicates, increased dietary cholesterol increases blood cholesterol & decreases HDL-cholesterol. Although there is no drastic change weight of adult rats during the course of the study, the cholesterol rich diet had increased visceral fat and decreased body's response to insulin. The phyto bioactive molecules may help to overcome the metabolic problems as the Avocado hexane extract has shown its effect (*invitro*). Further study on these molecules is required to check their pharmacological significance.

14. WHETHER ANY Ph.D. ENROLLED/PRODUCED: part of the project work is used for Principal investigator's Ph.D (Enrolled) and part of the work is done by M.Sc students for their project work.

OUT OF THE PROJECT

15. NO. OF PUBLICATIONS OUT OF THE PROJECTpart of the work is published in national conference proceedings.