SUMMARY AND CONCLUSION

Diet and lifestyle contribute to the high incidence of obesity. Obesity and its associated metabolic disorders is an increasingly prevalent human condition in different societies. Despite major progress in the understanding of mechanisms leading to obesity, no safe and effective treatment has yet been found.

The aim of the current study was to clarify the histological effect of diet induced obesity on the structure of adipose tissue and to evaluate the possible ameliorative role of green tea on adipose tissue.

40 male albino rats, 180 – 210 gm in weight were used in this study. They were divided into three groups.

Group I (control): 10 rats, each rat was given balanced diet for 6 week.

Group II (+ve control): 10 rats, each rat was given fat high energy diet for 6 weeks.

Group III: (**Experimental group)** 20 animals they were divided into 2 subgroups (10 animals for each).

Subgroup IIIa (Low dose group): 10 rats, each animal was given fat high energy diet for 6 weeks

and green tea extract (325 mg/kg/day) by an oral tube for the last 4 weeks.

Subgroup IIIb (High dose group): 10 rats, each animal was given fat high - energy diet for 6 weeks and green tea extract (500 mg/kg/day) by an oral tube for the last 4 weeks.

After 6 weeks the animals were weighed, sacrificed and specimens from perinephric fat were prepared for histological, study L/M (sudden III and osmic acid stains) and transmission and scanning electron microscopic study.

A morphometric study was done to measure adipocytes size and number. Statistical analysis was performed for interpretation of the collected data.

Body weight showed significant increase in group II and group IIIa animals compared to control group while no significant increase in group IIIb was detected.

Adipose tissue of group II and group III a showed marked increase in both number and size of adipocytes using light microscopic examination. This increase was also confirmed by morphometric study and statistical analysis.

Osmic acid stained sections of group II and group IIIa showed increased content of saturated fatty acids within fat cells.

Administration of high dose green tea extract with high fat diet specimens of adipose tissue of group IIIb showed nearly similar histological picture to that of the control group.

By TEM examination of adipose tissue in group II and group IIIa there was noticeable increased mitochondrial content within fat cells and infiltration of extracullar space by machrophages.

By SEM examination of adipose tissue in group II and group IIIa the adipocyte became more larger and globular. There was deep grooves overs their surface.

In conclusion :

From the preceding results, high fat diet led to marked morphological changes in adipose tissue. Such effects were ameliorated by concomitant administration of high dose green tea extract. So it is advised to consider a high dose green tea extract as an effective and safe weapon against diet induced obesity.