SUMMARY AND CONCLUSION
SUMMARY

The present study entitled "The study of changes in blood glucose level during general anaesthesia, in patients under going surgery" was carried out at M.L.B. Medical College Hospital Jhansi over a period of one year. The patients were divided into four groups depending upon the use of anaesthetic drugs.

For anaesthetic drugs were used:
1. Ether  Inhalational agent
2. Pancuronium
3. Gallamine  Non depolarising agents
4. Vecuronium

Ether is in use for a long period as a inhalational agent in the form of ether vapour. In the developed countries it is not in use now a days but in India being a developing country it is still in use.

Non depolarising muscle relaxants revolutionized the anaesthetic practice. These drugs produce active muscular relaxation without unwanted side effects. They have made it possible for the anaesthesiologist to have adequate control over ventilation of the patients.
There is a clinical need for a new non-depolarizing muscle relaxant of shorter duration, less cumulative property and fewer side effects. These new muscle relaxant will no doubt changes our pattern of practice by improving the safety and clinical relaxation.

ETHER

It was prepared by Valerius Cordus in 1540 and Sigmund August Forbenius named it ether and was used in anaesthesia by W.E. Clarke in 1842.

It is volatile liquid of molecular weight 74 and boiling point 35°C specific gravity of vapour being 2.6. Ether vapour is flammable in air. Chemically it is inert and can be stored in dark cool place unaltered in body and 85-90% is eliminated by lungs. This causes increases in heart rate at first due to (i) Catecholamine liberation (ii) Sympathetic stimulation and Vagal depression later the heart rate is relatively unchanged.

There are some side effect of ether.

1. Nausea and vomiting post operatively.
2. Explosive risk when used with $O_2$ and $N_2O$.
3. Slow induction and recovery from anaesthesia.
PANCURONIUM BROMIDE

Pancuronium bromide is a bisquaternary aminosteroid, described by Buckett, Hewett and Savage in 1967. It appeared to be an effective long acting non-depolarising neuromuscular blocking agent, without the evidence of steroid activity. The paralysis remained between 25 to 45 minutes.

Pancuronium is a markedly cumulative drug. It causes very little histamine release and mild transient depression of plasma cholinesterase. Pancuronium is known to have no effect on the liver or any influence over the carbohydrate metabolism causing no significant change in blood sugar level.

GALLAMINE TRIETHIODIDE

Gallamine triethiodide is a synthetic nondepolarising muscle relaxant was first described by Bovet et al in 1947 and used in anaesthetic practice by Huguenard et al in 1947.

Chemically Gallamine is tri (B-diethyl amino ethoxy) Benzine tri ethiodide. It is intermediate acting agent with duration of action between 20-30 minutes.
Tachycardia and hypertension occur in the use of this drug but it has no direct or indirect effect over the liver function or carbohydrate metabolism.

**VECURONIUM BROMIDE**

Vecuronium bromide is a recently introduced nondepolarising neuromuscular blocking agent developed by Savage in 1979.

Chemically the drug is the monoquaternary homologue of Pancuronium. However the sterioisometric relationship of the 3 acetyl group to the parent ring makes it structurally dissimilar. Advantage of this drug is its short duration of action in low doses and its lack of cumulative effect and its minimal side effect on C.V.S. liver and carbohydrate metabolism in doses upto 20 times that required for paralysis.

Vecuronium with its remarkable lack of effect on C.V.S. liver and other organ, is probably an example of the forerunner to a new generation of neuromuscular blocking agents which provide the anaesthetist with safer and more efficient means of producing muscle relaxation.
MODEL OF PRESENT STUDY

The present study was planned with aim to study the changes in blood glucose level during general anaesthesia in patients under going surgery under ether, pancuronium bromide, gallamine triethiodide and vecuronium bromide.

A total number of 60 patients of either sex and between 20-60 years of age were selected to fulfil the purpose of study.

All the patients were of ASA grade I or II and they were randomly allocated in 4 groups on the basis of ether and 3 muscle relaxant used.

Which were as follow:-

Group I:- In this group ether was used as a inhalation agent for the maintainance of anaesthesia.

Group II:- In this group pancuronium bromide was used in the dose of 0.1mg/kg body weight.

Group III:- Gallamine triethiodide was used in this group in the dose of 2mg/kg body weight.

Group IV:- In this group vecuronium bromide was used in the dose of 0.08/kg body weight each group consist of 15 patients.
ANES THE TIC MAN AG EMENT

Besides the preanesthetic medication and anaesthetic management remained same in all patients of study group. The premedication consisted of Atropine 0.6 mg given intramuscularly 30-45 minutes prior to induction.

Induction was performed with the sleep dose of 2.5% thiopentone (4-6 mg/kg) intravenously followed by the administration of suxamethonium (80-100 mg) I/V. Subsequently intubation was done with proper sized cuffed endotracheal tube connection were made to attach the patient with mapelson A circuit of Boyle's apparatus, I.P.P.V. was continued. Anaesthesia was maintained with the mixture of N₂O and O₂ (60:40) total gas flow was 7-9 litre/minutes.

OBSERVATION AND ANALYSIS

Patients in all the 4 groups were observed for the change in the blood sugar level at the different interval during anaesthesia. For this blood sample were collected as follow.
Sample I - Just before premedication.
Sample II - Just before induction.
Sample III - After intubation.
Sample IV - 30 minutes after intubation.
Sample V - After extubation.

from all the patients of each group. Blood glucose level estimation was done in each sample.

After the estimation of the blood glucose level in the various sample of the patients of all 4 groups and after analysing these findings with the help of statistical calculation, it was observed that there is very highly significant rise in case of the ether anaesthesia. This rise in upto 40% of the initial value.

But in case of pancuronium anaesthesia there is very small rise in the blood sugar level was observed. This case of gallamine a small rise was observed in blood sugar level which was 5 to 11%.

Lastly in case of vecuronium bromide anaesthesia there was upto 5% rise in blood glucose level.
CONCLUSION

From the present study we concluded that in comparison of muscle relaxant ether causes much more hyperglycaemia during general anaesthesia which is very highly significant rise.

But in case of muscle relaxant the change in blood glucose level is just significant.