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**RELATIONSHIP BETWEEN SERUM CARBAMAZEPINE
CONCENTRATION AND EPILEPSY CONTROL**

A PROJECT REPORT PRESENTED BY

G. MARIAN L. A. PERIS

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ABSTRACT

A study of the relationship between serum carbamazepine concentration and epilepsy control of a sample of epilepsy patients on carbamazepine monotherapy

G. Marian L. A. Peris

Board of Study in Biochemistry and Molecular Biology

Master of Science

Carbamazepine (5H- dibenzo [b,f] azepine -5- carboxamide) is one of the most frequently used first line drug for treatment of epileptic seizures, trigeminal neuralgia and psychiatric disorders. It has a highly lipophilic, neutral, tricyclic structure. It is usually administered daily with oral doses ranging from 200-1200 mg which give rise to drug plasma concentrations within the normal therapeutic range (17-42 $\mu\text{mol/l}$).

Appropriate monitoring of serum CBZ concentrations improves efficacy and enhances safety.

Blood samples from forty one (41) epileptic patients, aged between 12- 54 years were analyzed. All patients were taking carbamazepine (CBZ) as monotherapy and had achieved the steady state serum drug concentration.

An IMMULITE automated chemiluminescent analyzer was used to analyze the serum samples and determine serum carbamazepine concentration.

The main aim was to test how IMMULITE chemiluminescent kit method can be used to measure serum carbamazepine concentration in the Sri Lankan population.

Other objectives are to measure carbamazepine concentration and to find the relationship of carbamazepine concentration with seizure control, adverse drug reaction. Also to find the correlation between serum carbamazepine concentration and age, the gender and body mass index (BMI).

Data were analyzed using student's t- test one way ANOVA statistical method and correlation analysis, with the help of computer software 10.0 SPSS system.

Results showed that there is a significant difference between serum carbamazepine concentration and seizure control and there was no relationship between serum carbamazepine concentration and adverse reactions, age, body mass index and the gender of patients.

The IMMULITE chemiluminescent assay is fully automated, less laborious and time consuming, and has short turnaround time. It is a rapid, reliable system that was used successfully for the therapeutic monitoring of carbamazepine in serum.