

*The relationship between serum serotonin levels and cytotoxic drugs' adverse effects in cancer patients*

*A thesis*

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**By**

**Zainab Haroon Ahmed**

**B. Sc. Pharmacy**

**Supervised by**

**Dr. Nabeel A.J. Ali**

**Professor**

**Department of Pharmacology**

**Dr. Asaad A. Khalaf**

**Haemato-Oncologist**

**Department of Oncology**

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## **Abstract**

### **Background**

Nausea and vomiting induced by cytotoxic drugs cause a considerable distress to many cancer patients and may reduce food intake and affect patient's compliance with therapy.

It is proposed that cytotoxic drugs evoke serotonin release from enterochromaffin cells in intestinal mucosa and this lead to stimulation of the vomiting center in the brain.

### **Objective**

To investigate relationship between serotonin levels, liver functions and hematological parameters and various adverse effects of cytotoxic drugs especially nausea and vomiting in cancer patients. The relationship between serum serotonin levels and nausea and vomiting is controversial.

### **Method**

This is an observational study in cancer patients receiving cytotoxic drugs in Basrah Oncology Unit extend up to 72 hours after treatment in which we took patients information by a special questionnaire form and blood samples were collected for the estimation of serum serotonin levels by ELISA method and measurement of other laboratory tests including liver enzymes and hematological parameters.

## **Results**

One hundred cancer patients were included in this study. Nausea occurs in 9%, 31% and 40% patients before and 24 and 72 hours after cytotoxic drugs respectively, while vomiting occurs in 6%, 19% and 50% patients in the same order. The severity and frequency of nausea and vomiting increased significantly at 24 and 72 hours.

There was a significant ( $p < 0.001$ ) correlation between serum serotonin levels and platelets count before and after treatment. Serum serotonin levels were positively correlated with patients had both lymphomas and colorectal cancer and negatively correlated with leukemias, also serum serotonin levels was positively correlated with the emetogenic potential of cytotoxic drugs. There was no direct relationship between serum serotonin levels and nausea and vomiting.

## **Conclusions**

Cytotoxic drugs induced nausea and vomiting in a considerable number of cancer patients despite all antiemetic drugs at 24 and 72 hours. The level of serotonin was affected by both cancer type and emetogenic potential of cytotoxic drugs and there was no direct relationship between the changes of serotonin and nausea and vomiting.