

# Effect of Carbamazepine Therapy on Serum Leptin Concentrations

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## Abstract

During the course of using antiepileptic medication, patients with epilepsy may experience harmful metabolic effects. An important part of the regulation of food and energy use is played by the hormone leptin. With the use of several antiepileptic medications, leptin has been predicted to develop a relationship to weight gain in epilepsy patients. This investigation's objective is to assess how carbamazepine affects both serum leptin levels and body weight.

**Keywords:** Carbamazepine; Serum leptin; Antiepileptic drugs

## Introduction

One of the current chemicals involved in the etiopathogenesis of obesity is leptin. Adipocytes produce leptin, and the amount of leptin in circulation is correlated with the mass of adipose tissue. It reduces calorie intake while raising energy usage. It has a lipolytic action and accelerates adipocytes' fatty acid metabolism. It controls fatty acid oxidation rather than storage. Leptin has been shown to have specific impacts on the immune system, the reproductive system, and even the ability to treat epilepsy due to its actions on the hippocampal neurons. Leptin influences macrophages and vascular smooth muscle cells, and it also results in the development of atheroma plaques. Leptin interacts with insulin, another key hormone in controlling body weight [1, 2].

## Methods

One of the most prevalent neurological conditions, epilepsy typically requires lifelong therapy. The adverse effects of an epilepsy treatment regimen that may affect a patient's quality of life must be taken into account. One of these adverse effects is obesity, which affects people of all ages, but notably adolescents, and is related with vascular problems, dislipidemia, and hypertension, diabetes, and treatment incompatibility. Leptin and insulin became the focus of studies examining the metabolic side effects of antiepileptic medicines and their causes after it was discovered that there was a significant relationship between leptin and obesity, insulin resistance, and atherosclerosis. Several findings were found in earlier research on the effects of medications used to treat epilepsy on leptin and insulin [3, 4].

Our study's objective was to assess the impact of the regularly prescribed antiepileptic medicine carbamazepine (CBZ) on leptin levels, body mass index (BMI), and insulin levels.

42 healthy volunteers and 56 patients with epilepsy receiving CBZ monotherapy at the neurology clinic of the Izmir Tepecik Training and Research Hospital were included in this study. The Human Ethics Committee of the hospital gave its approval before the trial could start. Before participating in the trial, patients and controls were informed, and in accordance with the Declaration of Helsinki, their written informed consents were obtained. Patients and controls without a chronic illness made up the study groups [5, 6, and 7].

## Conclusion

Obesity is one of the metabolic side effects of antiepileptic drugs, which is a factor that limits treatment. Between 15% and 25% of patients receiving CBZ medication were observed to be obese. The CBZ therapy, has no impact on body weight. Regarding BMI and the obesity ratio in our study, there was no difference between the patient

and control groups [8, 9, and 10].

## Acknowledgement

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## Conflict of Interest

None.

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