# Simultaneous Increase in Serum Levels of IL-37 and IL-18 Binding Protein In Low-Grade and High-Grade Brain Tumors

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## Abstract

Background: IL-18binding protein (IL-18BP) might play a role in tumor escape from immune surveillance through interacting with IL-37. Such interactions modulate the antitumor activity of IL-18 and affect regulatory T cell (Treg) function. However, the biological roles of IL-37 and IL-18BP have not yet been explored in brain tumors. This study aimed to investigate serum levels of IL-37 and IL-18BP in high-grade and low-grade brain tumors and determine their associations with pathological characteristics of the patients. Subjects and methods: This case-control study consisted of 60 patients with brain tumors (40 low-grade and 20 high-grade) and 30 healthy controls. Enzyme-linked immunosorbent assay (ELISA) kits were used to measure the levels of IL-37 and IL-18BP in serum. Results: Our results indicated that serum levels of IL-37 and IL-18BP were significantly higher in patients with brain tumors (109.02, 426.37 pg/mL), high-grade (104.44, 428.87 pg/mL), and low-grade (113.88, 426.37 pg/mL) tumors in compared to healthy controls (35.03, 362.00 pg/mL), ($P<0.05$). Interestingly, our results revealed a significant positive correlation between IL-37 and IL-18BP serum levels in brain tumors ($n=60$, $R=0.42$, $P=0.001$). Our study also showed that serum levels of IL-37 and IL-18BP in glioblastoma grade IV were approximately similar to those in astrocytoma grade II, meningioma type I, and pituitary adenoma. Furthermore, no significant differences were found in serum levels of IL-37 and IL-18BP between patients with low-grade and high-grade tumors ($P=0.24$ and $P=0.61$, respectively). Conclusion: The simultaneous increase in IL-37 and IL-18BP serum levels and their positive correlation may facilitate disease progression in low-grade and high-grade brain tumors by inhibiting antitumor immune responses.

**Keywords:** IL-37, IL-18BP, Brain tumors