

## ADULT RAT BRAIN THERMOSTABLE PROTEIN COMPLEX – ACTION MECHANISM AND FUNCTION

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**Objective:** The cell proliferation is known to be controlled by many networks of regulatory protein. These multiple and complicated mechanisms of control are still being investigated. The aim of the present study is to determine the mechanism through which the adult rat brain thermostable protein complex (TPC) affects cell proliferation.

**Material and Methods:** In this experimental study adult and adolescent white rats, adult pigeon and mice were used. Brain, kidney and liver tissues from all mentioned animals were used as materials. Isolation of brain TPC by alcohol extraction, immunohistochemistry method, evaluation of transcriptional activity of the tissues and determination of mitotic index were used.

**Result:** The results show that by inhibiting transcription, the brain TPC reversibly decreases cell proliferation. The evidence suggests that TPC is not species-specific, but expresses tissue specificity with regards to terminally differentiated cells. The brain TPC inhibits the mitotic activity of the progenitor cells in dental gyrus of adolescent rats and with the decrease of mitotic index, the number of Ki67 positive cells increases. Simultaneously, the number of GAD65/67-positive cells in the hippocampus decreases by approximately threefold.

**Conclusion:** The brain thermostable protein complex (TPC) causes the reversible suppression of cell proliferation. The brain TPC leads to an increase the number of cells in the cell cycle, in tissues of adolescent animals.