ABSTRACT
Mechanism of Apoptosis reduction through increased ratio of Bcl-2/HSP70 by \( ACTH^{4-10}Pro^8-Gly^9-Pro^{10} \) in Acute Spinal Cord Injury

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Introduction
Necrosis and Apoptosis occur after an acute Spinal Cord injury. Cells destruction after primary injury are difficult to repair, but Apoptosis cascade due to secondary injury are preventable. To prevent Apoptosis process is an important strategy in acute compression injury of Spinal Cord. HSP70 is a tress response, it expression will increase in accordance with the severity of stress. \( ACTH^{4-10}Pro^8-Gly^9-Pro^{10} \) (ACTH4-10) therapy will enhance Bcl-2 expression and decrease Caspase-9 expression. It assumed that by increasing Bcl-2/HSP70 ratio, the cells Apoptosis will decline.

Objective
To analyze the mechanism of apoptotic cells reduction by treatment of ACTH4-10 in acute Spinal Cord injury through increasing Bcl-2/HSP70 ratio

Material and methods: a true laboratory experimental study with post test only control group design, using male Sprague-Dawley rat, 250-300 mg. the rats were grouped into 7 groups bay random allocation: 1 negative control, 4 positive control (mild and severe traumatic compression, 2 groups each) and 4 interventions groups with intra nasal drop of ACTH4-10 90 \( \mu \)m (mild and severe
traumatic compression, 2 groups each). Two positive control and 2 intervention groups (mild and severe traumatic compression each) were sacrificed in 3 hours after compression, and another groups 6 hours as well.

**Results:** Immunohistochemistry in intervention groups, 6 hour after traumatic compression, showed significant reduction in the total number of cell expressing HSP70, *Caspase*-9 and apoptotic cells. Significant enhancement found in the total number of cell expressing Bcl-2.

**Conclusion:**
ACTH4-10 has been significantly proven to lower the total number of apoptotic cells by increasing Bcl-2/HSP70 ratio

**Keywords:** Apoptosis, *ACTH^{4-10} Pro^8-Gly^9-Pro^{10}* , Bcl-2/HSP70 ratio, acute Spinal Cord injury