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**The Thesis Submitted for the Degree of M. H.  
(In the Field of Molecular Genetic)**

Evaluation of the effect of HL-7 peptide extracted from *Hemiscorpius  
Lepturus* scorpion venom on the expression of caspase 8 gene in Hela  
cervical cancer cell line

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**Abstract:**

Currently, cancer is one of the major causes of death in the world. One of the treatment methods is the use of bioactive peptides, which have fewer side effects. HL-7 peptide extracted from the scorpion *Hemiscorpius lepturus* is one of the bioactive peptides in the venom of this creature. In this study, the effect of HL-7 peptide at concentrations of 0, 45, 60 and 80  $\mu\text{M}$  on the percentage of survival of normal cells (neutrophils) and at concentrations of 0, 45 and 60  $\mu\text{M}$  on Hela cervical cancer cells after 12, 24 and 48 hours using MTT test. Also, in order to measure the expression of genes at the mRNA level, Real Time PCR technique was used. The results showed that the IC<sub>50</sub> of HL-7 peptide was 60  $\mu\text{M}$ , which means that this concentration of HL-7 peptide decreased the viability of cancer cells by 50%. Therefore, 60  $\mu\text{M}$  concentration of HL-7 peptide was used for further studies. Also, the results of Real Time PCR showed that the expression of caspase 8 gene at the mRNA level in Hela cancer cells treated with HL-7 peptide showed a significant decrease compared to untreated cells ( $p \leq 0.05$ ). The results of the present study suggest that the HL-7 peptide extracted from *H. lepturus* scorpion venom has anticancer properties against Hela cells, which is promising for further investigations in in vivo and preclinical conditions. In the future, investigation of anticancer molecular mechanisms and relevant signaling pathways for HL-7 peptide will be studied to confirm the obtained results.

**Key words:** gene expression, HL-7 peptide, *Hemiscorpius lepturus*, cancer, MTT