



## A-10-6365-1

پذیرفته شده در بخش سخنرانی

### Protein Whey Supplementation Stimulate Apoptosis Signaling Cascade Via Internal Pathways in Edl Muscle of Aged Rat

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**Background and Objective:** Loss of muscle function or sarcopenia is one of the consequences of aging. Among several factors involved in sarcopenia, apoptosis plays important role. In other hand, increase daily protein intake is advised for elderly in order too reduce incidence rate of sarcopenia. The purpose of this study was to investigate the effect of eight weeks of protein whey supplementation on the expression of genes involved in the internal and external pathways of apoptosis of long extensor muscle of thumb of Wistar rats. **Materials and Methods:** This study is one of the experimental-laboratory studies. Statistical sample of this study consisted of 14 male 22 months old Wistar rats. They were randomly divided into supplement (n=7) and control (n=7) that each group. Supplement group received 0.375g per body weigh protein whey daily for eight weeks. The left thumb extensor muscle of all animals was carefully separated and after freezing in liquid nitrogen transferred and stored in -80°. quantitative Real time-PCR was performed to measure Bax, Bcl-2, caspase 3, 8 and 9 gene expression. Independent t-test and Mann-Whitney U test were used to compare the means and rankings. The hypotheses were tested at the significant level ( $P \leq 0.05$ ). **Findings:** Results showed that Bax, Caspase 3, Caspase 8, and Caspase 9 genes expression increased in all samples in training group compared to the control group but this increase was only significant for Bax, Caspase 9 and 3 gens ( $p < 0.05$ ) and also Bcl-2 gene expression significantly decreased ( $P < 0.05$ ) in comparison with control group. **Conclusion:** It seems that protein supplementation lead to activation of the internal pathway of apoptosis by increasing mitochondria permeability in aged male rat.

**Keywords:** Sarcopenia- protein consumption- apoptosis- Mitochondria