Abstract No.151

The effect of Pomegranate Juice Supplementation on Oxidative Stress Following Exhaustive Exercise in Young Healthy Males

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Pomegranate fruit has potent antioxidant effects and may play a role in reduction of oxidative stress in healthy male athletes. Therefore, this study examined the effect of pomegranate juice supplementation on oxidative stress following exhaustive exercise in young healthy males.In an interventional study, 14 healthy male student athletes at 18 - 24 years old living in Dormitories of Ardabil University of Medical Sciences randomly were selected. After getting consent, general Information, anthropometric factors (height and weight), and fasting blood samples, one cup (240 ml) pomegranate juice supplementation were given to subjects per day for two weeks. Fasting blood samples were taken at the end of two weeks intervention. To subjects were given once exhaustive exercise and then so fasting blood samples were taken. Fasting blood samples were used for testing of serum MDA, total antioxidant capacity, glutathione, lipids profile, glutathione peroxides, superoxide dismutase, and paroxonase1 levels. Data were analyzed using descriptive statistical tests and Paired sample t-test.This study showed that the level of serum total antioxidant capacity and activities of enzymes such as superoxide dismutase, glutathione peroxidase, arylesterase, and standardized arylesterase activity were significantly increased following exhaustive exercise ($p<0.05$). The serum level of malondialdehyde was significantly decreased after exhaustive exercise ($p<0.05$). We observed no significant changes in serum levels of lipids profile, glutathione, and paroxonase1 activities after exhaustive exercise.Findings of this study suggests that the intake of pomegranate juice supplementation may be useful on body antioxidant defense system and reduction oxidative stress in exhaustive exercise.

Keywords: Pomegranate Juice, Oxidative Stress, Antioxidant, Exercise, Exhaustive.

Abstract No.152

Engineering a Pseudolysin to Resist Elevated Temperatures

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Neutral proteases (NPs) are zinc metalloproteases with biotechnological applications such as aspartame and peptide synthesis, but autolysis at high temperature is a limitation in this regard. Here, we replaced an extended surface region of elastase from Pseudomonas aeruginosa (pseudolysin), with single bound calcium, with the same region from thermolysin from Bacillus thermoproteolyticus, with three bound calcium to improve the thermostability of enzyme. Thermal stability of Zn-metalloproteases is quantified in terms of T50, the temperature for which a 30 min incubation reduces the enzyme activity by half. Accordingly, T50 was determined both enzymes. Moreover, the first order inactivation process was compared at different temperatures 55 to 90 °C. Based on the results, both T50 and $t_{1/2}$ remarkably improved for chimeric enzyme. To further assess the thermostability, thermodynamic parameters of inactivation process including activation energy (E_a), $\Delta H^{\#}$, $\Delta G^{\#}$ and $\Delta S^{\#}$ were calculated and compared. We concluded that the Ca-binding surface region is determinant for thermostability of pseudolysin.

Keywords: Pseudolysin, Autolysis, Stability, Protein Engineering.

Abstract No.153

Impact of an Extended Surface Region on the Organic Solvent Activity of Thermolysin Family

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Proteases are broadlyuse in peptide synthesis, protein processing, and food, pharmaceutical and detergent industries (Anwar and Saleemuddin, 1998, Gupta et al., 2002). They hydrolyze peptide bonds in aqueous while synthesize them in non-aqueous environments. As biocatalysts for peptide synthesis, proteases need to be stable in the presence of organic solvents. Here, a chimeric gene of thermolysin