

The Effect of Eight Weeks of Resistance Training With and Without Consuming Saffron Extract on Some Damaging Muscle Enzymes and Antioxidant Enzymes of Girl Students

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Abstract

Introduction: This study sought to compare the effect of eight weeks of resistance training with and without saffron extract on some damaging muscle enzymes of girl student.

Methods: the sample of this study were students aged between 20 and 29 years old they divided in 4 groups(resistance training+ saffron extract,resistance training +placebo,consuming saffron and control). Resistance exercise contains three movements, opening the knee with the device, biceps with a barbell standing, bent with the device, behind the arm with a barbell resting, leg press and bench press with an intensity of 55 to 80% of maximum power, maximum (1RM), respectively. The study is semi-experimental and applied research. Spss used for analysis. The results show that there is differences in LDH,MDA,SOD,CK between exercise +placebo and saffron extract with resistance training but there isnot differences between control and consuming saffron extract.finally, all subjects with and without the impact of resistance training with saffron extract can improve their muscle enzymes damaging,SOD and MDA.

Key words: Enzyme lactate dehydrogenase, Creatine kinase, Resistance training

INTRODUCTION

DOMS may occur many times during the life of an individual (Abdullaev, F.I. (2002) Typically occur after unusual muscle after exercise, moderate, severe and prolonged exercise and eccentric muscle contractions (karimi,2010) creatine kinase is one of biochemical markers associated with the rupture of the sarcomere (ganong, 2010). DOMS with increased levels of the enzyme creatine kinase (lactate dehydrogenase, myoglobin and increased aminotransferases in the blood of their relatives (Mine, 2004). Defence system is Enzymatic and non-enzymatic antioxidant (Julien, 2006) SOD and CAT act in the antioxidant defense (Carmeli, 2004).

Many studies have shown how the resistance training parameters affect muscle damage, muscle pain commonly occurs after resistance exercise with the amount of muscle damage and muscle inflammation. Also, the activity of the enzyme creatine kinase (CK) plasma is also a measure of muscle damage, the number of neutrophils in the circulation associated with these factors indicate inflammation and destruction of skeletal muscle. Pain and soreness occur after resistance exercise program along with muscle enzyme levels indicate muscle damage and muscle enzymes show the muscle tissue and is the difference between physiological conditions and injuries. Increased concentrations of these enzymes can be a good indicator of cell necrosis and severe muscle damage after exercise. Thus, leading role in metabolic and mechanical pressure. Metabolic fatigue, muscle fibers, reducing the membrane resistance Muscle after increasing calcium ions that enhances the activity of potassium channels and the proteolytic enzymes. Another mechanism could be damaged tissue area with sarcolemma rupture and reduce

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network sarcomeric is due to rupture of the page z. Much evidence shows that physical activity has a dual effect on the immune system and the chemistry antioxidant. close and colleagues (2004) reported an increase of malondialdehyde (MDA) in

Eccentric activity The prolonged and intense exercise increased susceptibility to infectious diseases and regular moderate exercise lowers it. Extreme sports with increasing harmful to cells and tissues including muscle enzymes creatine phosphate kinase and lactate dehydrogenase and increase of some cytokines, including TNF- α , IL-6 and CRP are associated, Saffron plant has medical purposes and food for thousands of years has been a rich source of antioxidant compounds, including flavonoids, proteins, vitamins), riboflavin and thiamin (, amino acids, minerals, gums as well as carotenoids such as Safranal, crocetin and crocin is (ninety, 2001) individual carotenoids of saffron neutralize oxygen, electron transport, reception and flavonoids saffron and add electrons by reacting with elements of reactive oxygen species, disruption of the work force nitrite synthesis, dysfunction oxidase, reducing the number of resident leukocytes during reperfusion, to trap free iron, reducing emissions and the release of peroxidase and blocking arachidonic acid, act as antioxidants many research has been made in connection with saffron. Krusin an active ingredient in saffron that has antioxidant effect on the exercise of this valuable plant has been under review. And the use of exercise in this study opens the door to further studies of physical education students and use the results in the field of training athletes. On the other hand there are conflicting findings in studies further research in the area About the impact of resistance training oxidant supplements anti-oxidant and immune seems essential. Memar bashi (1392) 39 healthy male students in three groups of his saffron (300 mg), indomethacin (75 mg) and control for ten days after seven days, the leg press machine, and weight equivalent to 80% of maximum isotonic strength in four with 20 repetitions, 3 times a minute rest between each muscle soreness was created. and continued oral administration. ANOVA with repeated measures was used. The results showed that saffron and indomethacin caused a significant reduction in pain and inflammation was worth consideration. Khosravi (1394) Effect of saffron extract of interactive Aerobic exercises and exhaustive oxidative activity in the heart and reduces the area of the brain move forward. Daryanoosh et al (1391) in an article entitled "The Effects of short-term use of ginger extract on delayed onset muscle soreness after a training session on girls declared the using ginger before exercise is more effective than after of it on decreasing doms. Moradi et al (1390) The impact of saffron capsules at a dose of 150 mg an hour before intense resistance training on muscle damaging enzymes.

this study, 10 female students of physical education randomly after 12 hours of fasting arrived and after taking capsules containing saffron, intense resistance training after three days of practice tests similar to the first session, but this time instead of saffron from placebo used. To measure the enzyme lactate dehydrogenase kinase in three stages (fasting, after taking saffron or placebo and after the test) blood samples were taken from the participants. Results showed that consumption of saffron with intense resistance training enhances the harmful enzymes. Assad et al (2009), after five days of supplementation with high-dose Krusin They reached the conclusion saffron extract with medium dose (50 mg) equivalent In addition to the antioxidant properties of saffron has anti-inflammatory properties, which strengthens the immune system. Exercise increases metabolism and consequently oxygen consumption, which has led to the production of free radicals during exercise, bringing together creation and development of inflammation affecting muscle damage after exercise plays a role, which can increase cellular damage. Generally, there are free radicals in the body causing serious muscle damage. Acute and chronic exercise can increase inflammatory markers and oxidative damage and the amount of herbal supplements and antioxidant inhibits the damage. In addition saffron have antioxidant, anti-inflammatory properties and reduces cholesterol and fat. Also, it improve cardiovascular health. On this basis saffron is a plant native to Khorasan and have anti-inflammatory and anti-oxidant which has been proven in various studies. so, in this research we intend the effect of saffron extract with resistance exercise muscle damage on some demaging enzymes and antioxidant enzymes of girl students.

METHODS

This study is Applied mid-experimental study The population of the study of girl students (20- 29 years) from one area in mashhad. they divided in 4 groups (with saffron extract exercise, resistance training without taking the extract or placebo, extract and control) with repeated measures (two-stage) the effect of eight weeks of resistance training on (LDH and CK) and antioxidant enzymes (SOD,MDA) were studied. The duration of the study group were eight weeks of resistance training groups with using extract and the group using extract a capsule containing 30 mg a day. Venous blood samples were received from the elbow. Spss 16 used for analysis and anova and lsd used for showing differences between groups.

RESULTS

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DISCUSSION

Although the consumption of the extract for eight weeks at a dose (30 mg per day) without resistance exercise,

also reduce levels of these indicators are neutral, and thus saffron extract can be affect antioxidant and anti-inflammatory system and there is differences between resistance training with and without consuming saffron

Table 1: Results of Anova, the difference between pre-test and post-test comparing four groups of subjects CK

Groups	Mean	SD	Sig homogeneity of variances test	f	p-value	LSD post hoc test comparing the combination of resistance training and creatine kinase saffron extract on subjects	
Resistance training+placebo	0/37	0/67	0/104	69/084	0/0001	Saffron	0/00001
						Saffron+resistance training	0/14
						Control	0/00001
Saffron	0/15	5.69	0/104	69/084	0/00001	Saffron+resistance training	0/00001
						Control	0/235
Saffron+resistance training control	2.97	0/87	0/104	69/084	0/00001	Control	0/00001
	0/44	0/39	0/104	69/08	0/00001		

Table 2: Results of Anova, the difference between pre-test and post-test comparing four groups of subjects LDH

Groups	Mean	SD	Sig homogeneity of variances test	f	p-value	LSD post hoc test comparing the combination of resistance training and creatine kinase saffron extract on subjects	
Resistance training+placebo	21.57	5.18	0/25	209.84	0/0001	Saffron	0/001
						Saffron+resistance training	0/0001
						Control	0/0001
Saffron	0/91	0/22	0/25	209.84	0/0001	Saffron+resistance training	0/0001
						Control	0/61
Saffron+resistance training	10.04	1	0/25	209.84	0/0001	Control	0/0001
Control	0/42	0/51	0/25	209.84	0/0001		

Table 3: Results of Anova, the difference between pre-test and post-test comparing four groups of subjects SOD

Groups	Mean	SD	Sig homogeneity of variances test	f	p-value	LSD post hoc test comparing the combination of resistance training and creatine kinase saffron extract on subjects	
Resistance training+placebo	3.04	75/0	35/0	65.04	0/001	Saffron	0/0001
						Saffron+resistance training	0/012
						Control	0/0001
Saffron	3.024	69/0	41/0	65.04	0/0001	Saffron+resistance training	0/0001
						Control	0/332
Saffron+resistance training	3.69	87/0	45/0	65.04	0/0001	Control	0/0001
Control	3.02	56/0	52/0	65.04	0/0001		

Table 4: Results of Anova, the difference between pre-test and post-test comparing four groups of subjects MDA

Groups	Mean	SD	Sig homogeneity of variances test	f	p-value	LSD post hoc test comparing the combination of resistance training and creatine kinase saffron extract on subjects	
Resistance training+placebo	3.37	52/0	35/0	70.02	0/001	Saffron	0/001
						Saffron+resistance training	0/023
						Control	0/001
Saffron	3.45	42/0	41/0	70.02	0/0001	Saffron+resistance training	0/001
						Control	0/123
Saffron+resistance training	4.43	34/0	45/0	70.02	0/0001	Control	0/001
Control	3.12	61/0	52/0	70.02	0/0001		

on ldh and ck (the results of this study show that eight resistance training week increase ck and ldh and is agree with Moradi et al (1390)bagae et al (1391) but is disagree with the results Azizi et al. (1391) after the implementation of swimming with vitamin-mineral supplementation, reduced muscle damage indicators LDH and CK that the reason of this differences is variety of training and supplement and exercise program,the time of Blood sampling and measurement techniques.Tksyra et al (2009) reported the effect of antioxidant supplements on creatine kinase and lactate dehydrogenase 4 weeks and found a significant effect was observed after exercise. Penn Cova et al (2003) observed no signs and symptoms of muscle damage on LDH and CK after 3 hours of cycling physical activity is very high. Factors such as body composition and weight loss, estrogen, smoking, aging, gender, frequency, duration and intensity of exercise each food effects, mechanisms that respond to the effects of their practice. Gold Farb and colleagues (2007)(in healthy men and women after aerobic exercise for 30 minutes VO2MAX increased MDA to 80%. In addition, Zhang et al (2009) reported an increase in superoxide dismutase by Saffron.

CONCLUSION

The results show that eight weeks of resistance training with and without the extract affect damaging muscle enzymes (LDH and CK and antioxidant enzymes of girl students. Overall, it should be noted that the effective mechanism of adaptation to physical activity is very high, factors such as body composition and weight loss, frequency, duration and intensity of exercise, each of them affect their research. Although the consumption of the extract for eight weeks at a dose (30 mg per day) without resistance exercise, also reduce levels of these indicators are neutral, and thus saffron extract can be effectively the antioxidant and anti-inflammatory system.

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