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The Effect of Solanum Nigrum Plant on Muscle Soreness.

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ABSTRACT

The muscle soreness delay, usually after its nuclear activities on and decrease efficiency and performance. The aim of this study was to evaluate the effect of Solanum nigrum plant on the signs and symptoms of delayed onset muscle soreness. This study experimental case controlled a girl student on 34 active healthy in Jiroft University of Medical Sciences. on a scale with audio and muscles pain before visual test and after the test scale exercises. Data analysis showed that a bilateral understanding muscle soreness in the group two difference scores ($P < 0/05$). Solanum nigrum plant consumption can be aches of muscles after exercises prevent.

Keywords: Muscle Soreness, Solanum Nigrum Plant, Exercises.

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INTRODUCTION

Miracle of medicinal plants, from ancient times, has attracted more attention among Iranians. Some plants, because of their healing were considered sacred, for example, Haoma plant due to healing is considered as plants prince [1].

Solanum nigrum plant is widely used as strong mosaic analgesic, anti-oxidant sedative and anti-inflammatory, and opioid and sedative drug (2 and 3). *Solanum nigrum* compounds, like any other plants is very complex, and includes many substances, such as Histamine, Atropine, scopolamine, alkaloid, flavone and *Glycoside* [4]. Since, physical activity and sport despite the benefits for athletes and the public can cause damage, and one of the consequences of the exercise is muscle soreness [5,6].

Muscle soreness usually is created after severe and prolonged muscle activities and exercise, which consists mostly of introvert contractions. The problem in non-athletes has affected their daily activities and reduced their efficiency [7]. In muscle soreness, cell membranes is damaged, and is followed by inflammatory responses, this disruption in normal people and beginners athletes may be caused by the implementation of a physical activity session [8]. The symptoms of muscle soreness includes reduced range of motion, decreased muscle strength, muscle stiffness, swelling and inflammation, increasing the concentration of keratin kinase enzymes, lactate Dehydrogenase in serum and plasma, as well as an increase in inflammatory reactions. The severity of muscle soreness reaches its peak 24 to 48 hours after the activity, and then gradually is subsided, five to seven days after the workout completely disappears [9]. Different ways to eliminate or reduce or prevent complications (with herbs and use of analgesics) of this is proposed. Such as cold, heat, electrical stimulation massage, Pharmacotherapy, oxygen therapy, which the basis of their administration is related to various reasons, including preventing the onset of symptoms such as enzymes, early removal of waste products after exercise, reduced the pain, and increased individual's tolerance to pain, and researchers have used this way to reduce the symptoms of the complication [10-13]. Several studies have examined the impact of using these methods, but consistent and reasonable method to treat muscle soreness is not stated. The use of natural anti-inflammatory mediators is considered among researchers. Food supplements with the belief that their use before or after exercise may have prevention or treatment effects have been very widespread [14]. culture and attitude can affect the potential behavior [15]. In this study, the effect of *Solanum nigrum* plant is studied to prevent muscle soreness. According studies, no information found on the impact of the plant on muscle soreness. Consequently, the aim of this study was to evaluate the effect of *Solanum nigrum* plant on the signs and symptoms of delayed onset muscle soreness.

METHOD

This study is an applied, clinical trial type and a double blind study. Among female students, who have had physical education course, 34 healthy girls (without any cardio - vascular and pulmonary – Skeletal problem), and non-athletes and having any regular exercises, 24 hours before the test were selected voluntarily, and after reading and signing the consent to participate in the test, are divided into two groups crashes after evaluation of plain after the first hours of exercise. After sampling, in the first session, the subjects became familiarity with the process of research, completion of health questionnaire and familiarity with the tools used in the study. In order to have any pre-workout soreness, audio-visual pain scale was used. After a the same exercise for all participants, under the supervision of relevant coach, again with a tool or audio-visual pain scale, pain and soreness status was found, and was recorded in the questionnaire. Thus, all students who had pain, randomly, received one of the capsules encoded (*Solanum nigrum* content and placebo starch content).

Again, using audio-visual pain scale, then (1.4 hours, 24 and 48) pain was evaluated.

Same exercise method by the respective master

To exercise program, each participant is in front of a stair with height of 46 cm, a person is set with metronome song on 40 and 40.4, the 20-minute program related to moving on the stairs was done as 15 strides per minute, and between each 5-minute, one minute rest is considered. The participants will be asked that with loud every beep, first put their right foot and then left foot on the podium, and then put down your right feet and then the left foot [16].

To measure the intensity of the pain of muscle soreness induced by exercise, participants will be asked to express their pain using a visual scale, this scale is graded as 100 mm, that zero means no pain, and 100, meaning the maximum pain [17], and severity of pain by moving and stretching muscle which represents their soreness in the best way, is reported on the ruler. In the end, breaking the code, which is available for supervisory colleague, data collected was entered the spss18 software and analyzed.

RESULTS

Demographic data revealed that the average age of the students in the test group (use o Solanum nigrum f) and control group has been 22.9 ± 3.2 , 21 ± 2.6 . That difference was not statistically significant ($P = 0.153$). 12% of the total sample was single, and 85 percent of them were studying at the undergraduate level. Peak of muscle soreness was observed in dual groups of research, between 4-24 hours after the test, the amount of soreness in the experimental group (use) compared to other had more severe decline after 24 hours. Table (1)
Solanum nigrum

Table (1): One-way ANOVA for two test and control groups in muscle soreness

Variable	Group (use of Solanum nigrum)	The control group (placebo)	The significance level p
The soreness after an hour	5.23 ± 10	8.77 ± 10	0.46
The contusion after 4 hours	3.8 ± 4.88	7.7 ± 10	0.34
The soreness after 24 hours.	2.9 ± 2	6.9 ± 9.9	0.44

DISCUSSION

This study is the first study on the use Solanum nigrum is to prevent muscle soreness. The findings showed that exercise protocol used by the device resulting in reduced muscle soreness during the study in the control group, so that, there was observed statistically significant differences between the two groups after one hour and 4 hours and 24 hours after the test.

Memarbashi et al in the study on the effect of oral administration of saffron on the biochemical and functional symptoms of delayed onset muscle soreness concluded the similar results [18].

Mohajeri et al showed the effects of antioxidant of ethanol extract of Crocus Saffron on muscle soreness [19]. The effects of drug Diclofenac before exercise to 72 hours after exercise in 20 male volunteers following a run in the downhill and measured biochemical variables of muscle soreness, but after using Diclofenac sodium, no significant effect was observed on the level of lactate dehydrogenase, in fact, it didn't have any effect on the muscle soreness [20]. The results of this study are inconsistent with the present study, and the reason of such contradictions is differences in the types of drugs, the period of use, dosage, and possibly, better absorption of plant extract and the type of exercise protocol on muscle soreness. Also, the results of this study about the perceived pain were inconsistent with results of White et al (2008), Williams (2007), Lenn (2002) and Donnelly (1998) on the effect of tight clothing and various NSAIDs Steroids on delayed onset muscle soreness caused by eccentric exercise. This difference may be due to differences in the studied organs, the type of drugs [21,22] used or better absorption of Solanum nigrum extract Tartibian (2009) . and Almakinderz (1999), by evaluating the effect of naproxen, and omega-3 on the level of perceived pain, after eccentric exercise, reported similar results, probably is because of the similarity of exercise for muscle soreness in research of Bourgris and Tartibian with protocol used in the present study [22,23]. Lenn (2002), Stone (2002) and Tokmakidis (2003), after studying the effect of fish oil, ibuprofen and aspirin, after application of eccentric exercise on the range of motion involved in the contractions, didn't achieve the acceptable results [9, 21,24 ,25]. Inconsistent results of the present study with the results of the above study can be attributed to anti-inflammatory properties of extract, however, because no research has been done on the effect of Solanum nigrum on acu Solanum nigrum te and delayed soreness, so more research is

recommended to find mechanisms on the effect of effective combined (Solanum nigrum) on delayed onset muscle soreness.

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