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Phoenix dactylifera pollen does not affect eccentric resistance exercise-induced delayed-onset muscle soreness (DOMS) in female athletes

 Springer

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Abstract


Aims This study is intended to investigate the effects of Phoenix Dactylifera pollen on markers of delayed-onset muscle soreness (DOMS) induced by eccentric resistance exercise in female athletes. **Methods** Thirty-six female athletes were randomly selected and equally divided into 3 groups of 12 subjects, including: (1) 100 mg of P. dactylifera, (2) 200 mg of P. dactylifera, and (3) 100 mg of starch (placebo). Having received 10-day supplementation based on their groups label, all participants performed a bout of eccentric leg curl exercise by lying leg curl machine (five sets, three repetitions, each set with 110–130% one-repetition maximum, 1-min rest between sets). The blood samples were collected before and 1, 2, 3 and 4 days after the exercise. Data were analyzed using repeated measures analysis of variance (ANOVA) at a significance level of $P < 0.05$. **Results** Neither 100 mg nor 200 mg doses of P. dactylifera had considerably significant effects on blood levels of creatine kinase (CK), lactate dehydrogenase (LDH), aspartate aminotransferase (AST), alanine aminotransferase (ALT), lymphocytes and neutrophils, thigh circumference, the angle of leg extension and the Sargent jump (the markers of DOMS) compared to the placebo. **Conclusions** Eccentric resistance exercise increased markers of DOMS; however, consuming either 100 or 200 mg P. dactylifera for 10 days before the exercise had no favorable effects on the DOMS markers in female athletes.

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Sport Sciences for Health (2021) 17:615–624
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ORIGINAL ARTICLE

Phoenix dactylifera pollen does not affect eccentric resistance exercise-induced delayed-onset muscle soreness (DOMS) in female athletes

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Abstract

Aims This study is intended to investigate the effects of *Phoenix Dactylifera* pollen on markers of delayed-onset muscle soreness (DOMS) induced by eccentric resistance exercise in female athletes.

Methods Thirty-six female athletes were randomly selected and equally divided into 3 groups of 12 subjects, (1) 100 mg of *P. dactylifera*, (2) 200 mg of *P. dactylifera*, and (3) 100 mg of starch (placebo). Having received 10 days of supplementation based on their groups label, all participants performed a bout of eccentric leg curl exercise by lying machine (five sets, three repetitions, each set with 110–130% one-repetition maximum, 1-min rest between sets). Blood samples were collected before and 1, 2, 3 and 4 days after the exercise. Data were analyzed using repeated measures of variance (ANOVA) at a significance level of $P < 0.05$.

Results Neither 100 mg nor 200 mg doses of *P. dactylifera* had considerably significant effects on blood levels of creatine kinase (CK), lactate dehydrogenase (LDH), aspartate aminotransferase (AST), alanine aminotransferase (ALT), lymphocytes and neutrophils, thigh circumference, the angle of leg extension and the Sargent jump (the markers of DOMS) compared to the placebo.

Conclusions Eccentric resistance exercise increased markers of DOMS; however, consuming either 100 or 200 mg of *P. dactylifera* for 10 days before the exercise had no favorable effects on the DOMS markers in female athletes.

Keywords Alanine aminotransferase (ALT) · Aspartate aminotransferase (AST) · Creatine kinase (CK) · Lactate dehydrogenase (LDH) · Lymphocytes · Neutrophils

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Introduction

Delayed-onset muscle soreness (DOMS) is defined as general muscle pain in several hours of a day, following unaccustomed or high eccentric exercise [1]. According to the Munich Consensus Statement, DOMS is caused by an overexertion-functional muscle disorder. DOMS is associated with acute inflammation (due to stimulation of local inflammatory mediators and activation of the secondary biochemical cascade) and is characterized by affected muscles, accompanied by tenderness and pain. Usually, the pain subsides and disappears spontaneously within a week [2].

DOMS occurs as a result of microscopic lesions in the Z-band of the muscle sarcomere leading to myofibrillar disruption and necrosis. Increased efflux of muscle proteins including lactate dehydrogenase (LDH), creatine

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... In terms of the etiology, DOMS occurs after a large amount of centrifugal contraction exercise, which is caused by excessive strain of muscles and "tendon loss and maintenance" [6]. Meanwhile, muscle stiffness is alleviated and muscle strength decreases [7]. At present, there are a variety of treatment programs and rehabilitation training for DOMS, but there are differences in the treatment effect among different treatment programs, and the treatment effect is often unsatisfactory. ...

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● Saleh Rahmati-Ahmadabad · ● Abbass Ghanbari-Niaki

Effect of exercise on lipid metabolism and lipoprotein turnover. Effect of fasting on lipid metabolism and lipoprotein turnover. Comparative effect of exercise and fasting on lipid metabolism and l ... [\[more\]](#)

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● Shahla Dehghan · ● Maghsoud Peeri · ● Hasan Matinhomae · [...] · ● Stephen R Stannard

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● Mohammad Ali Azarbayjani

My goal is to find a treatment for reducing apoptosis rate in exposure to toxins; such as H2O2, Diazinon, Cadmium etc

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Inflammatory and immune responses to a 3-day period of downhill running in active females

August 2017 · Cellular and molecular biology (Noisy-le-Grand, France)

● Sepideh Jafariyan · ● Amirabbas Monazzami · ● Z. Nikousefat · [...] · ● Kheirollah Yari

Exercise-induced muscle damage (EIMD) is accompanied by inflammatory and immune responses. However, due to the repeated bout effect, there will probably be less EIMD. Hence, the purpose was to investigate inflammatory and immune responses over a three-day period of downhill running in active females. Eleven moderately trained healthy females performed three 60-minute bouts of downhill running in ... [\[Show full abstract\]](#)

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Effect of small-sided games on the biochemical profile of elite soccer players

May 2021

● Michail Mitrotasios · ● Athanasios Souglis · ● Aristotelis Gioldasis · [...] · ● Georgios Andronikos

In soccer players are exposed to intensive physiological stress during training, which promote changes in biochemical markers that practitioners have to investigate in order to determine the internal training load. In this sense soccer training mainly due to eccentric actions cause biochemical disturbances that increase inflammation and muscle damages which may reduce performance. A popular ... [\[Show full abstract\]](#)

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Article

Indices of skeletal muscle damage and connective tissue breakdown following eccentric muscle contrac...

April 1997 · European Journal of Applied Physiology and Occupational Physiology

● Stephen Brown · R B Child · ● Stephen H Day · ● Alan E. Donnelly

Indirect indices of exercise-induced human skeletal muscle damage and connective tissue breakdown were studied following a single bout of voluntary eccentric muscle contractions. Subjects (six female, two male), mean (SD) age 22 (2) years performed a bout of 50 maximum voluntary eccentric contractions of the knee extensors of a single leg. The eccentric exercise protocol induced muscle soreness ... [\[Show full abstract\]](#)

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Effects of bilateral or unilateral lower body resistance exercises on markers of skeletal muscle dam...

November 2018

● Ozkan ISIK · ● İlkay Doğan

Background: It is known that different intensity exercises create skeletal muscle damage at different levels. The purpose of the study was to compare effects of bilateral or unilateral lower body resistance exercise on markers of skeletal muscle damage. Methods: The Brzycki Formula was used to calculate participants' one repetition maximum strength for each movement and limb, separately. Blood ... [\[Show full abstract\]](#)

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