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THE EFFECTS OF BEE-POLLEN ON MAXIMUM OXYGEN CONSUMPTİON (VO2 MAX), BLOOD PARAMETERS AND RECOVERY TIME OF ENDURANCE ATHLETES

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ABSTRACT

The purpose of this study was to determine the effects of bee-pollen on VO2 max, blood parameters (serum cholesterol, serum glucose, serum triglycerid, HDL-C (High-Density Lipoprotein Cholesterol), LDL (Low-Density Lipoprotein), total protein (Albumin and Globulin), WBC, RBC, HGB and recovery time of endurance athletes. Subjects were recruited from athletes who performed endurance type of exercise on a regular basis in a collegiate track team.

Twelve voluntarily male subjects ages between 21-26 participated into study. Subjects were randomly assigned as a treatment group (N=6) and a control group (N=6). Treatment group received 15 gr. bee-pollen and control group received a placebo only. For statistical evaluation, pre and post-tests measurements were taken in both groups for blood samples, heart rate, and body fat. In addition, Bruce protocol was applied on a treadmill to determine VO2 max. The data was analyzed by the Wilcoxon signed rank test. Alpha was set at $p<0.05$. Results from this study show that the treatment group had a significant effect on weight ($z = -1,99$), serum glucose ($z = -2,21$), serum triglycerid ($z = -2,03$), RBC ($z = -1,99$) as well as the recovery time of 15 sec. ($z = -1,99$), 30 sec. ($z = -2,23$) and 45 sec ($z = -1,99$) at level $p<0.05$. On the other hand, there were no significant differences found in control group pre-and post-test parameters. This study is limited to the characteristics of the participants, intervention, tests, and the measurements applied. Therefore, further studies should address the effects bee-pollen on different gender, physical activity, and parameters.h.

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Key Words: Bee-pollen, Endurance Athletes, Maximum Oxygen Consumption.

INTRODUCTION

Although genetic ability and optimal training methods play an important role on athletic performance, many dietary ergogenic aids are being used by athletes to have optimal performance amongst them bee-pollen research has showed that it had positive effects on body functions and certain illness when used as a nutritional supplement (Astrand, & Rodalf, 1986; Williams, 1993, 1994, 1995), for muscular endurance and strength of athletes (Chen et al., 1986), and maximum oxygen consumption (VO_2 max) of adolescent swimmers (Maughan & Evans, 1982). Yet there have also been studies that have provided conflicting results and did not support the effects of bee-pollen on perceived exertion of athletes (Woodhouse et al, 1987). Endurance type of sports activities requires high O_2 supply. High maximal aerobic power (VO_2 max) is one of the important determining factors for a good athletic performance in many team sports (Bompa, 1999; Potteiger, 2000). Bee-pollen is a natural and non-tocsin substance. In spite of known useful effects of bee-pollen on human body there is not certain information about effectiveness of bee-pollen on endurance performance of athletes. (Sorkun, 1987)

Therefore, he purpose of this study was to determine the effects of bee-pollen on VO_2 max, blood parameters (serum cholesterol, serum glucose, serum triglycerid, HDL-C (High-Density Lipoprotein Cholesterol), LDL (Low-Density Lipoprotein), total protein (Albumin and Globulin), WBC, RBC, HGB and recovery time of endurance athletes.

METHODS

Subjects were recruited from athletes who performed endurance type of exercise on a regular basis in a collegiate track team. Twelve voluntarily male subjects ages between 21-26 participated into study. Subjects were randomly assigned as a treatment group (N=6) and a control group (N=6). Treatment group received 15 gr. bee-pollen and control group received a placebo only. For statistical evaluation, pre and post-tests measurements were taken in both groups for blood samples, heart rate, and body fat. In addition, Bruce protocol was applied on a treadmill to determine VO_2 max. Pre-test and post-test blood parameters values as serum glycose, serum triglycerid, serum cholesterol, HDL-C, LDL, total protein and hemotocrit levels

were analyzed from experts of Muğla Government Hospital. The data was analyzed by the Wilcoxon signed rank test. Alpha was set at $p<0.05$.

RESULTS

Results from this study showed that the treatment group had a significant effect on weight (z = -1,99), serum glucose (z = -2,21), serum triglycerid (z = -2,03), RBC (z = -1,99) as well as the recovery time of 15 sec. (z = -1,99), 30 sec. (z = -2,23) and 45 sec (z = -1,99) at level $p<0.05$. On the other hand, there were no significant differences found in control group pre-and post-test parameters. Table 1-28 and Figure 1-5 show the results of the study respectively.

DISCUSSION

Results of this study revealed that there were significant differences between pre and post test values of body weight of the athletes that received bee pollen and treatment group body weigth decreased. Similar to findings in the literature, research showed that optimum level of bee-pollen loading on mouses increased muscle power but there was not any effect on body weight (Woodhouse et al.,1987;Williams, 1995). In addition, there were no significant differences found in treatment and control groups paremeters in terms of treadmill running time, maximum heart rate on treadmill and maximum oxygen consumption pre and post test values. In contrast, Maughan et al., (1982) found that be polen had a siginificant effect on maximum oxygen consumption of the adolescent swimmers.

Present study did not find any significant results in treatment and control groups subjects' amounts of blood cholesterol, HDL-C, LDL, total protein, WBC (locosit) and HBG (hemoglobin). Moreover, there were no significant differences found in treatment and control groups subjects' pre-and post-test values of chest, abdomen and thigh fat measures, body mass index, bioelectrical impedance fat percent, bioelectrical impedance body fat weight.

When we analyzed the athletes' recovery times, there were significant differences in treatment group subjects' pre and post test values of recovery time of 15 sec. (z = - 1.99), 30 sec. (z = - 2.23) and 45 sec. (z = - 1.99) compared to control group subjects. However, there

were no significant diferences found in pre and post test values of treatment and control group subjects' recovery times of 60 sec. Finally, This study is limited to the characteristics of the participants, intervention, tests, and the measurements applied. Therefore, further studies should address the effects bee-pollen on different gender, physical activity, and parameters.

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