

Research Article

The Choice of Sports Nutrition Tonics for Weight Lifters

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Abstract: The study selected sports tonics which can increase levels of anabolic hormones, promote synthesis of the protein in weightlifters' bodies, improve proportion of energize of phosphagen system in weightlifting exercise. A theoretical analysis of the biological function for the sports tonics that weight lifters selected are carried. Results indicate that heme iron, lycopene and chromium and zinc (Zn) can be used as sports tonics for weight lifters, at the same time the effect will be better if several supplements being taken together. For weightlifters a comprehensive nutritional supplement can help the supplements play a complementary role and accelerate recovery and improvement in body function for the players during the strength training and competition.

Keywords: Nutritional supplement, sports tonics, weight lifters

INTRODUCTION

Muscle quality and muscle strength (strength is almost the basic quality of all sports exercise). Therefore, strength training and improvement of power quality is a problem faced by lifters (studies have shown that the level of muscle quality is closely related to muscle fiber cross-sectional area. Tension of skeletal muscle generated by contraction is proportional to its size of cross-sectional area. It is estimated that, cross-sectional area of muscle can produce force and the protein is a major component of skeletal muscle fibers, accounting for 80% of its dry weight. Meanwhile, according to the power generated by the muscle filaments slide doctrine, proteins such as actin, myosin, troponin are the structural basis of generating power. From the biochemical theory, to increase protein synthesis, on the one hand, it needs high-quality exogenous protein supplement to provide a wealth of raw materials, amino acids for muscle protein synthesis (Nobuko, 2013). On the other hand, the body must have a high level of anabolic hormones, such as testosterone, in order to create the best hormonal environment for the promotion of the synthesis of hormones. However, anabolic hormone levels in weight lifter tend to decline during high intensity training, during which decline in testosterone is the most significant, reducing protein synthesis in the body, affecting the performance of training and competition for athletes. Regarding nutritional supplement that athletes choose, to maintain or increase levels of anabolic hormones without stimulants means is the research topics to be resolved both at the theoretical level or practical level.

According to the characteristics in weightlifting program, we can choose Fructus Tribuli saponins,

lactalbumin, Creatine, Herba Rhodiola, Amino Acids and Derivatives and some metal elements can be used as sports supplements for weightlifting athletes. Fructus Tribuli saponins and Herba Rhodiola's functions have been introduced! This study focuses on the functions of lactalbumin and creatine and amino acids and their derivatives and certain metal elements.

It involves in transporting oxygen exchange and tissue respiration process and relates to formation and maturation of red blood cells. red blood cells in the bone marrow into the immature hematopoietic tissues and Ye Lin combine to form heme, which then globin synthesis and hemoglobin; iron as a component of enzymes iron plays an important role, for example, iron as components of catalase, plays an important role in health promotion to remove the body of hydrogen peroxide; Iron is also involved in other important functions of the body, such as catalytic promote P-carotene into vitamin A, to promote the production of antibodies in vivo, drug detoxification in the liver and lipids in the blood transport and so on.

MATERIALS AND METHODS

Lycopene overview: Lycopene is a carotenoid, mainly from tomatoes and tomato products, watermelon, carrots, strawberries and other fruits, where there is the highest concentrations in tomato. Because there is no activity of vitamin A, while in the past it was believed that only those carotenoids who can be converted into vitamin A related to human nutrition and health, therefore it has not been given attention to the people. In recent years, studies have found that it has a more superior performance than other carotenoids, for example, its scavenging of singlet oxygen is 100 times

Table 1: The basic characteristic of participants

| N | Age | Height (cm) | Weight (kg) | Training years | Level master | first rank |
|------|------|-------------|-------------|----------------|--------------|------------|
| M 12 | 21±6 | 181±5 | 70±6 | 4±3 | 10 | 2 |
| F 12 | 20±4 | 175±6 | 60±4 | 4±6 | 9 | 3 |

of the antioxidant vitamin E, more than 2 times of p-carotene. This performance is drawn attention by domestic and foreign scholars and they have done a lot of research about its anti-tumor effect of medicine and health science aspects of the anti-aging aspects. Meanwhile, lycopene also attracted enough attention by its excellent anti-oxidation, anti-fatigue, enhance athletic ability in terms of sports nutrition circles (Gilbert, 2003). There have been sports supplements as lycopene products coming out, which are used in sports practice.

Lycopene can be used as a biological antioxidant to quench singlet oxygen and play a significant role in collecting peroxy radicals and radical anions. It eliminates peroxide radicals produced by the movement of human body, thus delaying occurrence or remove the fatigue after exercise. Reflected in the motion practice, it results in maintaining the training results, abrasion resistant muscle fibers, promoting the elimination of exercise-induced fatigue, enhance immunity and prevent athlete's movement caused by temporary immunodeficiency. The result of lycopene against free radicals metabolism after high-intensity endurance exercise suggests that lycopene can enhance the body's antioxidant capacity after the movement.

Heme iron: Heme iron, also known as Ye Lin iron, is compounded by Ye Lin Ye Lin and a member of the ferrous form, with the formula $C_{34}H_{30}FeN_4O_4$. Its relative molecular mass is 614.48. Heme iron is the original Ye Lin (Fe complexes of PP-IX), among higher animals, heme mainly exists in two forms: hemoglobin and heme myoglobin. The former exists in red blood cells and the later in skeletal muscle cells. Additionally, in cytochrome enzymes, catalase, peroxide physical structure of the enzyme structure also contains heme. Heme iron is a biological state of iron, which can be directly absorbed by the intestinal membrane cells without producing any gastrointestinal irritation. It has high bioavailability and is the ideal iron supplement.

Chromium (Cr) and zinc (Zn): Chromium (Cr)'s physiological functions mainly refers to promoting protein synthesis and metabolism and growth; Cr content is high in nucleoprotein, research development food that now it can promote the synthesis of RNA, Cr also affect the transport of amino acids in the body and is an important component of the glucose tolerance factor. The glucose tolerance factor is a glucose tolerance factor from nicotinic acid, glutamic acid, glycine and a sulfur-containing amino acids. It can enhance biological effects of insulin, glucose phosphorylation by activating mutase and accelerate the

use of in vivo glucose and promote muscle glycogen into affect lipid metabolism and inhibit the biosynthesis of cholesterol and lower serum total cholesterol and triglyceride levels.

The main physiological function of zinc in the human body is that it is component of more than 522 kinds of metal enzyme. These enzymes play an important role in tissue respiration and protein, fat, sugar, nucleic acid metabolism. It can promote the synthesis of male hormones, improve blood testosterone levels athletes. It can promote synthesis of DNA, RNA, protein synthesis when missing obstacles Zn (Purification, 2002). Zn participates saliva protein synthesis and Zn deficiency can cause taste retardation, loss of appetite and protein synthesis involved in vision; Zn deficiency can affect vision, maintain immune function. According to Zn in DNA synthesis role, Zn deficiency leads to immune cell proliferation decreased and thymic activity reduced.

Effect of compatibility of different sports supplements on lifters' physiological indicators:

Experimental study:

Study target: National men and women weightlifters, each with 12 people, a total of 24 people, the basic situation can be seen from Table 1.

Test indicators and methods:

- **Morning pulse test:** Every morning before athletes get up, lying still, conduct morning pulse, blood pressure. Among the conventional indicators of physiological tests, select the first 1, 3, 5, 7, 9 weeks to analyze the data.
- **Blood test:** Testing solution: In the morning before meals weekly, select the data of 1, 3, 5, 7, 9 weeks to analyze; Test equipment: Sysmex SF-3000 hematology analyzer from Japan; Testing Index: leukocyte (WBC), red blood cell (RBC), hemoglobin (HB), hematocrit (HCT), Mean corpuscular Volume (McV), Mean Corpuscular Hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), Red cell Distribution Width (RDW), lymphocytes, monocytes (MONO), neutrophils (NEUT).
- **Green blood ketone (T) test:** Test program: At the end of five training phase (1, 3, 5, 7, 9), test in blood testosterone on Monday.
Test Method: Chemical radioimmunoassay
Test equipment: FJ-2008P RIA counter 262T
Reagents: Blood Jade ketone analysis by radioimmunoassay kit.

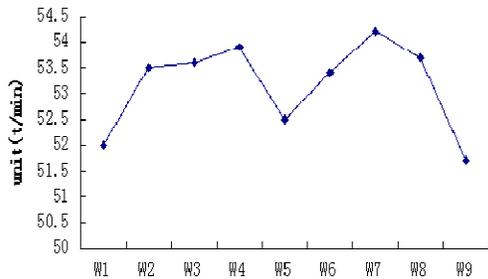


Fig. 1: Morning pulse change of every male group

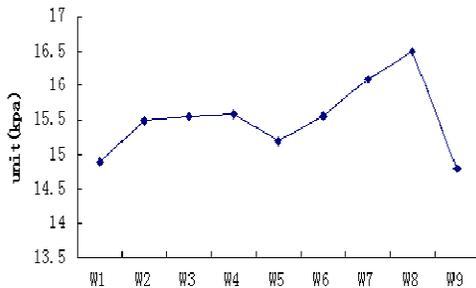


Fig. 2: Mean values of female athletes' Systolic pressure in different training weeks

- Blood Urea Nitrogen (BUN):** Testing program: In addition to the baseline, at the end of the training phase of every friday training of 1, 3, 5, 7, 9 weeks, conduct immediately blood testing.
 Test equipment: 721 spectrophotometer
 Reagents: blood urea nitrogen chemical assay kit
 Test Method: Enzymatic.

RESULTS AND DISCUSSION

Data processing: The experimental data uses SPSS12.0 data processing and conducts T-test and the experimental results are expressed as mean standard deviation ($X \pm SD$).

From Fig. 1 and 2, it shows weightlifter morning veins changing in intensity of physical activity throughout the training cycle. There are two peaks in the fourth week and eighth week, but there are three valleys first in 1, 5, 9 week and in nine weeks it reaches the minimum value in the entire training period.

Taking different sports supplements taking the impact of weight lifter in systolic blood pressures' changes. Morning systolic blood pressure averages of male and female race walkers throughout the training period producing significant volatility in physical activity and intensity. In the fourth week and eighth week there are two crests, but there are three valleys in the first week 1, 5, 9 and for the first nine weeks it reaches the minimum value of the entire training period.

CONCLUSION

Taking different sports supplements can accelerate morning pulse recovery levels of weightlifter in high intensity training period (Abdui, 2011), which indicates that the heart rate reserve capacity has been enhanced and is good for functional recovery of athletes after exercise. Taking different sports supplements, the lifters' blood pressure levels can be adjusted in the high-intensity training period, which suggests that cardiac contractility athletes has increased so that it can quickly adapt to a predetermined exercise load. Using different sports supplements can comprehensively improve the compatibility of male body function level of male and female Race Walkers and reduce the damage caused to the body by high intensity training. It can significantly improve the athlete's hemoglobin (IIB) and increase the athlete's aerobic capacity. And also you can adjust immunization levels of the high-intensity endurance exercise to ensure the success of the training program.

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