



# Androgen Alternatives

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Literature Education Series On Dietary Supplements

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For better or for worse (depending upon your viewpoint), as of January 2005 androgen or “andro” products are no longer available. For some athletes, this represents a significant loss in their dietary supplement arsenal. After all, whatever else you might say about andro it did have some established benefits:

- Some androgens increased testosterone levels
- Some androgens increased performance
- Some androgens increased strength
- Some androgens promoted muscle growth

So now that andro is gone, what viable alternatives currently exist? Following is a discussion of dietary supplement ingredients that offer similar benefits to those of andro, or perhaps better.

## **LJ100™**

LJ100™ is a standardized herbal extract of *Eurycoma longifolia*; also known as Tongkat Ali in Malaysia where it is used traditionally for sexual potency as well as for sports enhancement.<sup>1</sup> At least one of its mechanisms of action as a sexual enhancer is that it results in elevated testosterone levels. This has been demonstrated in animal research,<sup>2</sup> and more importantly in human research where male subjects under 50 years old experienced an

average testosterone increase of approximately 91% with 100 mg of LJ100™.<sup>3</sup> This may be due to a reduction in sex hormone binding globulin (SHBG)<sup>4</sup> which would otherwise make free testosterone unavailable. In any case, human research has demonstrated that LJ100™ has a definite anabolic effect. In a pilot study by Hamzah and Yusof<sup>5</sup>, 100 mg of an extract of *Eurycoma longifolia* was shown to increase fat free mass, reduce fat mass, increase muscle strength and size. Not a bad potential substitute for andro.

## **Tribulus terrestris**

In Ayurveda, the herbal medicine *Tribulus terrestris* has been used in treating genito-urinary troubles, and has been prescribed in treating impotence and as a general tonic for centuries. Of greater significance to athletes are the studies where the standardized extracts of *Tribulus terrestris* were found to modestly increase testosterone. Tests on healthy men demonstrated that a five day treatment with three tablets of the standardized extract (250 mg each) per day significantly increased levels of testosterone by approximately 30%.<sup>6,7</sup> In another study, a group of men suffering from a range of reproductive disorders were treated with the standardized extract of *Tribulus terrestris*. The results confirmed previous observations, and the treatment increased testosterone levels and improved libido without producing side effects.<sup>8</sup> <sup>9</sup> Another nice potential substitute for andro.

## **Rhodiola Rosea Root Extract**

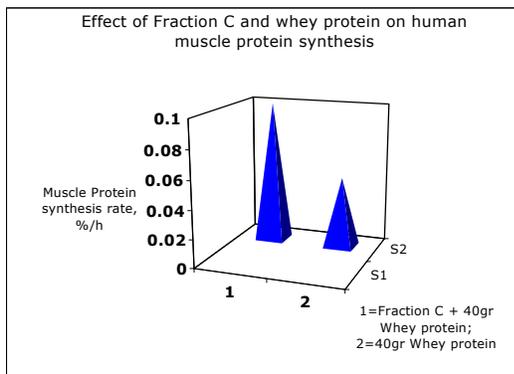
A wide array of human health benefits related to mental health and physical performance has been clinically demonstrated with *Rhodiola rosea* root extract. Among these benefits is the ability to enhance athletic performance. As a matter of fact, Soviet/Russian sport

professionals have used *R. rosea* for decades with very consistent results in enhancing physical performance. It gives competitors a pronounced positive effect in both physical and mental stamina as well as accelerating recovery time without anabolic steroids.<sup>10 11 12</sup> *Rhodiola rosea* support this by mobilizing, sustaining, and recovering energy reserves in muscle tissue. Studies on *R.rosea* show that this herb activates a unique biochemical adaptation to the metabolic loads of extreme physical stress.<sup>13 14 15 16 17 18</sup> Once again, *Rhodiola* has certain properties that can nicely substitute for the performance enhancing aspects of andro.

### Crystalline “Fraction C”

Myostatin (*myo* - muscle, *statin* - stop) is a substance produced by the body, whose job it is down regulate skeletal muscle mass (inhibit muscle growth or regeneration).<sup>19 20</sup> “Fraction C” from marine plants of the *Cystoseira* species helps prevent myostatin from attaching to its receptor. When this happens, myostatin can’t inhibit muscle growth. The result may be greater increases in muscle mass.

In fact, this was demonstrated in a placebo-controlled, double-blind study conducted in Russia in which the effects of whey protein alone were compared to whey protein + Fraction C, on muscle protein synthesis.<sup>21</sup> Eighteen athletes (wrestlers) were divided into two groups and ingested either 40 grams of whey protein or 40 grams of whey protein + Fraction C twice per day for 60 days. All athletes were placed on a standardized diet and continued their normal rigorous training. Before and after supplementation, muscle biopsies were obtained from both legs of each subject. Using stable isotope methodology, rates of muscle protein synthesis were compared. The results were that whey protein + Fraction C lead to 50% greater anabolic muscle growth than whey protein



alone.

### Combining Eurycoma, Tribulus, Rhodiola, Fraction C & two other herbs

If the previously mentioned herbs are good, what happens when they are combined together? This was the subject of an open-label pilot study by Ziegenfuss et al,<sup>22</sup> in which subjects took a combination of the aforementioned herbs together with the herbs *Ajuga turkestanica* and *Rhaponticum carthamoides* Root Extract for 6-8 weeks in combination with intense resistance training. The results were that the herbal combination enhanced adaptations to intense resistance exercise, especially the acquisition of strength (increased up to 58%), while posing no obvious health risks. Apparently this combination provides some of the same strength-enhancing benefits of andro.

### L-Arginine

Nitric oxide helps regulate and direct muscle physiology by stimulating vasodilatation, which results in increased blood flow to working muscles. In turn, this leads to increased oxygen transport, delivery of nutrients to skeletal muscle, a reduction in blood pressure, helping to promote the repair of muscle fibers, and improvements in lactic acid clearance. So how does one boost nitric oxide levels? The amino acid l-arginine is the answer. The main importance of l-arginine is considered to be its role as a precursor (building material) for the synthesis of nitric oxide.<sup>23</sup> Supplemental sources of l-arginine are thought to augment nitric oxide production<sup>24</sup>, with the result being a measurable increase in blood flow<sup>25</sup> (i.e., vasodilatation). The idea is that the beneficial results of this vasodilatation for athletes include increased oxygen transport, delivery of nutrients to skeletal muscle, muscle fiber repair, and improved endurance.

### Conclusion

Although andro products are no longer available, athletes still have a significant number of viable dietary supplement options to replace them. These options may provide similar or better benefits as andro.

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