



Increasing Muscle Protein Synthesis

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Literature Education Series On Dietary Supplements

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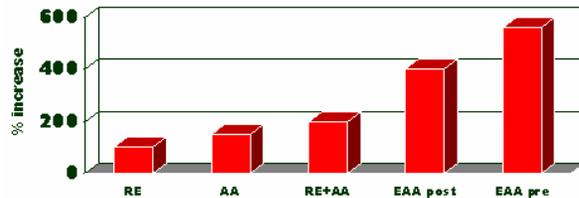
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Every bodybuilder knows the value and necessity of protein for supporting muscular repair and growth. Furthermore, most realize that it is some combination of amino acids in the protein that provide the actual support for growth. But which ones? The branched-chain aminos, the essential aminos or all the aminos? As you might have guessed all of the aminos play some role in the supporting muscle growth, but newer research suggests that that it is the essential amino acids that play a particularly vital role in the synthesis of muscle protein. As a matter of fact, a specific blend of essential amino acids has been shown to promote up to a 400-600% increase in muscle protein synthesis.

Amino acid blend

Yes, I realize that this sounds like marketing hype, but rest assured it's not. Research published in two of the world's most prestigious medical journals, the *American journal of physiology (Endocrinology and metabolism)*¹ and the *Journal of Sports Sciences*² has definitively demonstrated that human subjects given 6 grams of a specific essential amino acid blend taken before weight training increased their muscle

protein synthesis by almost 600%; and when taken one or two hours after training, experienced up to 400% increase. So what was so special about this amino acid blend that caused such a significant increase in muscle protein synthesis? The answer is a unique amino acid profile, and the timing of its administration.



Amino acid profile

The favorable amino acid profile consisted strictly of the eight essential amino acids leucine, phenylalanine, lysine, threonine, valine, histadine, isoleucine and methionine, in specific milligram amounts. Contrary to the current position of conventional nutrition science, the researchers also found that there was no additional benefit of including the other non-essential amino acids. Likewise, the amino acid blend did not require any carbohydrates to exert its effects on muscle protein synthesis.⁵

Timing

In these studies, the amino acid blend was given either pre-workout or post-workout (one or two hours after weight training). This is significant because previous research³ clearly demonstrated that the timing of protein intake relative to exercise

is critical for stimulating muscle protein synthesis. The advantages of taking this blend at the right time can clearly be seen in the graph below, which indicates the extent of increases in muscle protein synthesis with resistance exercise alone (RE), an amino acid blend alone (AA), RE and AA together, essential amino acids (EEA) pre-workout, and EEA post-workout.

Conclusion

A specific blend of essential amino acids taken at the right time may provide a positive effect on muscle protein synthesis.

References

¹ *Am J Physiol Endocrinol Metab* 2002; 283:E648–E657.

² *Journal of Sports Sciences* 2004; 22: 65–79.

³ *Am J Physiol Endocrinol Metab* 2001; 281: E197–E206.



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