

Growth Hormone And Growth Hormone Secretagogues

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Growth hormone is a protein hormone (not steroid) that is produced and secreted by the pituitary gland in the brain. Like estrogen, progesterone, testosterone, and melatonin, growth hormone secretions and blood levels decline as we age. After age 30, growth hormone secretion declines about 14% per decade. By age 60, many people secrete 75% less growth hormone than a 20-year old. Daily release of growth hormone averages about 500 mcg at age 20, then declines to 200 mcg at age 40, and 25 mcg at age 80. The dramatic decline in growth hormone secretion as we age is directly associated with many aspects of aging. Conversely, growth hormone replacement or the ingestion of supplements that boost growth hormone secretions have been shown to reverse many signs and symptoms of aging in both human and animal studies. The anti-aging effects of growth hormone occur as a result of the hormone's effects on stimulating the release of Insulin-like Growth Factor-I (IGF-1) from the liver. IGF-1 elicits powerful anti-aging effects on most body tissues. Because IGF-1 is only secreted in response to the influence of growth hormone, IGF-1 blood levels decline with age in response to declining growth hormone secretion by the pituitary gland. Growth hormone is primarily released in pulses that take place during the beginning phases of sleep, which in turn stimulates the release of IGF-1 from the liver. As growth hormone secretions decline with aging so too, do blood levels of IGF-1.

Reversing the Aging Process with Growth Hormone

The decline in IGF-1 blood levels as we age has been shown to contribute to many aspects of aging, which include, thinning of our skin, more rapid wrinkling, brittle hair, and nails, grayed or dulled hair color, reduced energy, loss of muscle and bone mass, decreased libido and sexual performance ability, increased body fat and other common signs and symptoms of aging.

Conversely the use of growth hormone injections and/or supplementation with natural agents that stimulate the release of growth hormone, have been shown to boost IGF-1 blood levels back to more youthful levels and reverse many age-related changes in the body. Studies show that by boosting IGF-1 blood levels back to more youthful levels subjects have experienced a multitude of anti-aging benefits including:

- improved immune function
- increased sexual potency and function
- increased muscle strength , muscle mass and energy
- decreased body fat
- elevated mood
- improved sleep patterns
- improved memory
- improved skin thickness, texture, and reduced wrinkle lines
- restoration of hair color
- improved vision

The most pronounced anti-aging effects have been seen in patients where IGF-1 blood levels have been returned to a level at or greater than 350ng/ml, which certain anti-aging doctors claim can single-handedly reverse aging by up to 20 years in older subjects. To achieve blood levels in

this range, regular injections of growth hormone are required by a physician who is trained in anti-aging medicine. (To find a qualified physician near you who is a member of the American College For the Advancement Medicine or The American Academy of Anti-Aging Medicine, you may wish to visit the following websites www.acam.org and www.worldhealthnet.net)

Experimental data also show that growth hormone replacement not only enhances immune function to a marked degree, reversing some of the age-related decline in immune function, but it has been shown to regenerate the thymus gland which is typically quite shriveled up by age 40 and is almost undetectable by age 60.

However, growth hormone injections have been shown to cause side effects, especially in subjects where IGF-1 returned to levels approaching 400ng/ml. The most common side effects include swelling of the feet, fluid retention, joint pains, carpal tunnel syndrome and more rarely, allergic responses.

Growth hormone injections are also extremely expensive, and a relatively new intervention and so, no one is certain at this point as to its long term safety profile. I personally am concerned about boosting IGF-1 blood levels above 290- 300ng/ml, as a number of research papers have correlated higher IGF-1 levels with an increased risk for breast and prostate cancer. This doesn't necessarily mean that IGF-1 causes cancer, but it does imply that more research is required before we can state with certainty that growth hormone injections are a completely safe anti-aging intervention. We do know that IGF-1 increases the replication rate of certain cells in

the body by virtue of its anabolic (tissue growth) effects. The concern is that, if a cluster of malignant cells are lying dormant in the prostate gland or in breast tissue, the influence of high IGF-1 levels in the bloodstream may promote the growth and replication of these cancer cells. There is evidence to show that individuals who have received growth hormones injections during their lifetime, as a result of growth hormone deficiency that would otherwise result in dwarfism and growth failure, experience slightly higher rates of certain cancers than individuals who grew up without growth hormone injections. For these reasons patients with a previous history of cancer are advised not to take growth hormone injections, although to this point, older subjects receiving growth hormone injections for anti-aging purposes have not showed an increased incidence of any type of cancer. Some evidence suggests that growth hormone replacement may actually help prevent cancer due to its rejuvenating effect on the immune system. There is one case report showing a significant drop in patient's PSA (prostate specific antigen) level back to the normal range, after the patient refused surgery for prostate cancer. The patient had an initial PSA level between 50-60, which is sky high, and confirmed needle biopsy showing adenocarcinoma localized to the prostate gland. He was treated with growth hormone injections along with melatonin and DHEA supplementation (dehydroepiandrosterone). However, in regards to growth hormone and cancer risk, more research is required before we will know with certainty whether or not the blood levels of IGF-1 achieved through growth hormone injections are entirely safe for everyone. For this reason many anti-aging experts favor the use of natural ingestible supplements that increase the release of growth hormone in our body, as an alternative to growth hormone injections. These growth hormone releasing supplements, known as growth hormone secretagogues, (pronounced, **Se-kre-ta-gog.**) stimulate the release of growth hormone from the pituitary gland and in turn, the release of IGF-1 from the liver, *but to a lesser degree* than growth hormone injections.

Growth Hormone Secretagogues and Anti-Aging

A startling discovery in recent years has shown that the pituitary gland does not reduce its production of growth hormone as we age, but continues to make an abundant amount of growth hormone well into our 70's and 80's. This is not the case with estrogen, progesterone and testosterone, whereby their synthesis declines with aging. The reason that growth hormone levels in the blood decline with aging is due to a decline in the hormone that stimulates the pituitary gland to release youthful quantities of growth hormone into the bloodstream. What happens as we age is that the pituitary gland releases smaller and smaller quantities of growth hormone (GH) with each decade that passes, due to a lower production of growth hormone releasing factors (GHRH) that are secreted by a gland called the hypothalamus, which sits above the pituitary gland in the brain. Essentially, GHRH is the hormone that stimulates the pituitary gland to release its GH to the bloodstream. Most of the growth hormone we secrete occurs in bursts at night during slow wave sleep, and the remainder is released in smaller bursts during the day, which are greatly enhanced by exercise (especially intensive weight training) and by following a low glycemic diet (growth secretions are suppressed when insulin levels are high). Growth hormone may be released about 12 times during a 24-hour period, but after the age of 50, the number and intensity of pulses is significantly decreased. As we get older the hypothalamus synthesizes and releases less and less GHRH and in turn, the pituitary releases less and less GH, and in turn, the liver secretes less and less IGF-1, which all results in an acceleration of the aging process.

Studies over the past number of years have revealed that a combination of certain amino acids, ingested orally as a supplement at specific dosages, can stimulate the pituitary gland to release greater quantities of growth hormone after the age of 40, elevating our IGF-1 blood levels to match those we experienced up to our mid-thirties. Studies show that supplementation with these amino acid combinations, collectively known as growth hormone secretagogues, can raise IGF-1 blood levels up to 275ng/ml, which may be a safer level than 350-400ng/ml, which occurs with GH injections. Clinical studies involving subjects over 40 years of age have demonstrated that supplementation with growth hormone secretagogues can raise IGF-1 blood levels by 30%, on average, over a three month period.

In a three month study, which used a proven growth hormone secretagogue supplement, blood levels of IGF-1 increased by 30% on average by the end of the twelfth week and patient self-assessment scores indicated that of the thirty-six participants, 58% noted improvement in muscular strength, 42% reported an increase in muscle size, 68% reported body fat reduction, 74% noted an increase in energy, 47% reported improvements in skin texture, 32% reported improved skin thickness, 37% reported reduction in wrinkles (disappearance or reversal), 21% reported improvement in general healing capacity, 37% reported improvement in joint and back flexibility, 47% felt their immune system was stronger, 32% reported improved sexual potency, 44% of men reported better sexual stamina (penile erection), 66% of men reported less frequent nighttime urination, 53% reported improved mental energy and clarity, 37% reported improved attitude and mood elevation and 47% reported improvement in memory. In male subjects there was a reduction in their PSA blood levels (prostate-specific antigen), which signifies that this intervention did not trigger prostate malignancy or enlargement. As well, blood sugar levels in diabetic subjects were shown to improve, and there was also an improvement in both cardiac

(heart) and pulmonary (lungs) tests during the course of the three-month trial. The author of the study (D.M. Ladley M.D.) also noted that blood pressure was better controlled and an improvement in menopausal symptoms among affected women in this age group. Ladley, an authority on the use of growth hormone secretagogues, elaborates that improved energy, endurance, muscle mass and strength, and reduced body fat, were among the most frequently reported benefits in the first four weeks of supplementation. New hair growth, restoration of hair color, thickening of the skin, and disappearance of skin discoloration generally occurred between the eighth and the twelfth weeks, with continued improvement beyond the twelve-week term. There were no side effects reported from the use of the growth hormone secretagogue by any of the participants in this study. Growth hormone secretagogues are generally well tolerated and no consistent reports of adverse side effects have been reported.

Raising IGF-1 Blood Levels with Growth Hormone Secretagogues

The degree to which your IGF-1 blood levels may rise from the use of well-designed growth hormone secretagogue supplement depends largely upon the your initial IGF-1 blood levels. In individuals over 40 years of age, who are most likely to have sub-optimal blood levels of IGF-1, the lower the initial IGF-1 levels the greater is likely to be the rise in IGF-1 with growth hormone secretagogue supplementation. In some cases a rise of 200% has been seen after the first four weeks of supplementation. In the study by Ladley initial blood levels of IGF-1 ranged from 21-276ng/ml. Those with lower values appeared to have experience the largest increases in IGF-1 blood levels with secretagogue supplementation. As a rule, growth hormone secretagogue supplementation cannot elevate blood levels of IGF-1 beyond 275ng/ml. Thus, before beginning

a supplementation program with a growth hormone secretagogue, you should first have your blood levels of IGF-1 evaluated by your physician (the cost of this test is usually not covered by universal health care or private insurance plans). If you are over 40 years of age and your current blood levels of IGF-1 are below 275ng/ml, then it is likely that you will see positive anti-aging changes if you add a growth hormone secretagogue to your overall anti-aging wellness program. It is recommended that after beginning such a program that you have your IGF-1 blood levels re-evaluated after twelve weeks to note the level of change in IGF-1 in your body. If your blood levels are already above 275ng/ml then it is unlikely that you will see a dramatic reversal in the signs and symptoms of aging in your body with the use of a growth hormone secretagogue supplement, although some experts claim that anti-aging benefits still occur even in these cases.

How to Choose and Use a Growth Secretagogue Hormone Supplement

Unfortunately, the growth hormone industry is filled with unproven, ineffective and/or scam products that are not worth spending your money on. The well-known, and most highly esteemed anti-aging medical doctors in this field often recommend a growth hormone secretagogue supplement to their patients and colleagues that is available under two names. These products are *PRO hGH Symbiotropin* and *Meditropin*. You can learn more about them at www.prohghsymbiotropin.com and www.meditropin.com. Essentially, you drop two of the effervescent tablets into a glass of water before bedtime, and allow them to fully dissolve before drinking it down. It is best taken on an empty stomach to eliminate the risk of other amino acids competing for entry into the brain at the same time. It is, therefore, advisable not to eat anything for a couple hours before bedtime. The supplement is used for five consecutive days, followed

by two days with no supplementation, and then five days on again, repeating this sequence. For practical reasons, many people take this supplement Monday to Friday, skip Saturday and Sunday, and begin again on Monday.

Experts suggest that if your initial blood level of IGF-1 is below 100ng/ml, then you should double the dosage (4 effervescent tablets dissolved in water before bedtime) of the growth hormone secretagogue until your levels achieve at least 200ng/ml, at which point you can assume the normal dosage of two tablets per day. If you do not see a change in your blood levels of IGF-1 after three months of using two tablets per day, and your levels are below 275ng/ml, then experts advise that you may need to double the dosage in these rare instances.

The use of growth hormone secretagogues represents a novel breakthrough in anti-aging research. Thus far, only a few well-designed trials have been published or presented at major conferences that demonstrate the anti-aging benefits associated with their use. However, these preliminary studies have been most impressive, and many physicians trained in anti-aging medicine, who have seen first hand the age reversal potential of growth hormone secretagogues, regularly recommend these supplements to their patients over the age of 40. Studies over the next few years should provide more definitive evidence as to the merits of using these supplements to counter the aging process and are likely to better identify any adverse side effects that may result from their use in some cases, as well as existing health conditions that may be aggravated by their use.

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