

## Oral Growth Hormone?

Lately I've come across this 'exciting new compound' being talked about (and sold) more than I'm comfortable with. Let's get this straight right from the beginning. You will not come across any oral growth hormone because it doesn't exist.

Time to put things into perspective. Diabetes is a major health concern for the NHS and globally. It cost us here in the UK £1 million PER HOUR. Drug companies have spent countless hundreds of millions trying (and failing) to developing an oral delivery system for insulin (which is either not able to be used or absent in diabetic patients). Multiple daily injections are uncomfortable and inconvenient. So, adherence to treatment is often low. Blindness and amputations have surged in popularity as a result.

Diabetes is a potential major cash cow for drug companies. Over one third of total research is for diabetic disorders. By contrast, the limited range of use (and number of patients) for growth hormone is low. They're mostly made up of a small selection of undersized children.

Injections are by far the best delivery system for insulin and growth hormone. More of it remains intact and gets to where it needs to be. This is important. Both are peptides, a delicate string of amino acids, the building block of protein. Insulin has a chain of 51, whereas growth hormone has a whopping 191. And all of these needs to be in a precise, present and correct order to do their job. If not, they're completely useless.

Here's the problem with trying to make these drugs into oral form; peptides are big. Left intact they can't squeeze through the layer of the intestine, nor can they get through the next layer into the blood stream. They're also very fragile. Stomach acids ruin them. Even if it didn't, the liver will kick their arse into small, useless fragments. They'd be shit at UK Ninja Warrior.

It turns out that the absolute oral availability of most oral peptides is LESS THAN 1%. This is the amount of the unchanged drug that has been absorbed and getting to where it should. Calling this percentage extremely low is a gross understatement. This means they can't work. Any 'oral growth hormone' tablets will do precisely fuck all. For comparison, growth hormone injected into fat has an absolute bioavailability ranging between 60 – 90%.

If injections aren't your thing, there may be an alternative. MK-677 has been around for a while. Despite its recent popularity in bodybuilding circles, it was first discovered nearly 40 years ago. This substance *is* orally active as it's *not* a peptide. MK-667 does not act like growth hormone but stimulates the pituitary gland to make it. This pea sized bit of brain lives at the base of the brain and produces growth hormone. MK-677 enhances the release of growth hormone, which is issued out at certain times on day in a pulsatile way. This make MK-677 a *secretagogue*. It's is a substance which promote secretion of other things. In this instance, it's growth hormone.

Unlike other oral image and performance enhancing drugs, it only needs to be taken once a day. Just before bed is optimal, as growth hormone appears to have its biggest surge of release whilst asleep.

But is it safe? Probably. That's always assuming that what you're taking is what you think it is. Remember, approximately one third of gear in the UK either contains something else or nothing at all. You pays your money and you takes your choice.

An interesting study was performed on healthy males aged 24 – 39 years old. A randomised selection of this group was given 25mgs of MK-677. This is a pretty standard dose. The researchers wanted to know if this drug would increase growth hormone enough to preserve muscle when

calories were restricted. The diet was pretty brutal. Only 1 gm of protein per kg of body weight with a total calorie intake of only 18 calories per kg. For a 14 stone man this is only about 90 gm of protein and 1600 calories per day. Not a lot. Some of the studies participants binned it.

The boffins observed a slight increase in growth hormone as well as IGF-1 (what the liver converts growth hormone into) in those given the drug, rather than a fake placebo tablet. The MK-677 group had less overall weight and muscle mass loss. This showed it reversed protein catabolism, the undesirable wastage of muscle when they are used as fuel.

The conclusions were that MK-677 increased growth hormone enough to reverse catabolism by calorie restriction "and is therefore anabolic". The report did note, however, that this effect is less marked than previous similar trials performed using growth hormone injections. It is not as potent.

This trial tips a nod at why bodybuilders like to use growth hormone. As a mass builder is it overshadowed by the far more powerful (and cheaper) anabolic/androgen steroids, like testosterone. Its use is more favoured for preserving muscle mass when eating less and striving to shift stubborn fat.

It should be noted that MK-667 is a research peptide. There are no pharmaceutical medicines of this compound available. It is not especially strong. Nor is it a fat burning, muscle building wonder drug. Branch chain amino acids may do the job equally as well. But what you choose to swallow is entirely up to you. Just make sure it's not a load of bollocks.

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