

# COLOSTRUM: BIOTECHNOLOGY'S NEXT STEP

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## Introduction

**You thought you have seen it all. The fads. The forays into shaman medicine. For the past twenty years you have waded through the hype and hooplah of advertising that promises you 'mega-gains for almost no effort'. Just buy the pill and you'll see!**

**No doubt you have tried it all as well. You survived the earliest steroids. You lived through the free-form vs. tri-peptides in the amino acids war. You sat and weighed the words of 'experts' who casually referred you to little-known-seldom-used literature to back their claims. And through it all, they never really told you what it means or why it is important to 'trigger a release'.**

To gain like the big boys, you have tried every esoteric metal and metalloid known to man, except for maybe arsenic and mercury. (Better check: maybe you have taken them too!) You have been forced to contend with an incessant barrage of dressed-up vitamins with new, fancy names and never-before-heard-of substances from, herbs and small countries. All you ever have been able to go buy is the one with the most likely story and the one the salesman happened to like that week. Getting tired of it all? Well it is high time. **Because the rules of this game have just changed!**

Now you are on the verge of riding a wave provided by big business, a high technology wave that will take you into the next century. **No hype. No bull.** The products are peptide growth factors and wave has a name: genetic engineering.

The compounds that are bound to radically change your life have nothing to do with 'enhancing your body's natural development capacity'. Today, that sounds pretty anemic and passe'! **These factors do not need to 'trigger releases' because they are themselves the anabolic hormones of interest!**

The revolutionary peptides are insulin-like Growth Factor one (IGF-1) and Growth Hormone (GH), as you may already know. The revolution comes from biotechnologists who have tricked bacteria into producing kilograms of this stuff at a time.

What is more, the newest and latest information from highly credible research journals is that credit to GH for *all* anabolism is simply not true. These are not *Enquirer* articles that are saying this! The last three years of research are definitive and have made IGF-1 the clear and obvious anabolic peptide of choice.

But wait, you say. Genetically engineered peptides like IGF-1 are *drugs!* How can this revolution overtake the sport of bodybuilding if we are talking about controlled substances, more expensive and as tightly regulated as Steroids? **The answer, and the beauty of the argument, is that orally bioavailable IGF-1, and it's growth factor friends, have been with us for a very long time. They are found naturally and in exceptionally high concentrations in a special kind of milk, a substance called COLOSTRUM.**

## Colostrum and the role of IGF-1

Q: How long is a very long time?

A: Ever since mammals have walked the earth. As you know, even before a mammalian baby is born, the mother is capable of producing milk. However, *just after* the birth event, there comes a signal from the body of the mother to principally include a *boatload* of growth factors in the mammary fluid, mostly IGF-1. This signal

lasts and the growth factor content remains high for between 24 hours, to at most 48 hours after birth. After this time normal milk production begins.

The added punch for colostrum is that these growth factors, for reasons unclear, enter the bloodstream intact. Why is it not degraded like steak? Perhaps due to the high concentration of other large proteins present which are much more likely to get worked on first. Some think there is an elusive 'transport factor' which guides the peptides to the bloodstream. Other more reasonable possibilities include the well-understood peptide transport vessels present in the small intestine, of which there exist several kind. Aside from the scientific data, you should ask yourself, 'Why would nature include such precious growth factors as are found in colostrum to have them simply converted to amino acids with no overt benefit to the newborn'? Nature would not!

It is best to discuss the functional properties of IGF-1 to explain exactly why it is so anabolic. In former times, IGF-1 was called 'Somatomedin C' and sometimes still is. IGF-1 is a small peptide related to insulin, thus the name 'Insulin-like Growth Factor'. **However, it has a strikingly more potent anabolic than any known compound, even steroids.**

This is because steroids do not necessarily direct new muscle protein synthesis or differentiation, they merely force the muscle cells to retain nutrient building blocks (amino acids), enhance glycogen synthesis and occasionally divide. GH does the same type of thing but with the added step of early cellular differentiation. The most important fact and one that is often overlooked is that GH tells the muscle cell to make localized IGF-1 which readily takes over the anabolic activities of nutrient uptake, proliferation and differentiation.

After GH brings specific muscle cells, the ones which are getting the

workout, to the stage where they are ready to differentiate, IGF-1 is synthesized to draw in more nutrients than they could ever use.

**It is now known that *only* through action via the IGF-1 receptor can there be a loud and clear signal to the nucleus of the muscle cell, a direct instruction to make more muscle cells and make more muscle protein.**

Just a few years ago, growth hormone was sometimes called 'somatotropin' from 'somato', related to the body, and 'tropin', having to do with nutrition or in this case anabolism and growth. And so the old name for GH meant 'body nutrient factor' or 'body growth factor.' In this context it is easy to see why IGF-1 was called 'somatomedin', from 'somato', given above and 'medin' meaning between. Thus the role of IGF-1 comes *between* the bodily effects of GH and actual anabolism. That is, without the intervening effects of IGF-1, GH would be much less significant as a growth enhancer, and the *only* reason why it works so well is because of your body's own IGF-1 production.

AS you have been made well aware, one of the real problems with achieving a extreme muscular development lies not just in harnessing anabolism but in preventing *catabolism*. It is worthwhile to bring up this point because it has been repeatedly demonstrated that even in old age and starvation conditions, IGF-1 acts primarily to prevent weight loss. **In a protein-rich diet with sufficient IGF-1 the cell can therefore be expected to devote all biochemical energy to anabolism, focusing on growth.**

Luckily for every newborn that has ever existed, nature has been aware of this fact and has included IGF-1 in high concentration in colostrum. Colostrum has the responsibility of jump-starting the newborn growth and immune systems with lots of factors which help elongate bone and

cartilage, develop muscle, and ward off infections of all types. What follows is a brief list of some of the important compounds, which contribute to the anabolic effects of colostrum.

### **The Factors**

Colostrum contains other protein factors beside IGF-1, which have very important anabolic properties, these are: Interleukin One (IL-1), a factor called FGF, and EGF. Apart from those, there exist other growth factors and nutrients of value to the serious lifter, but none are even near the concentration or possess the directly anabolic effects of IGF-1 on muscle.

The role of Interleukin One (IL-1) in colostrum is obviously that of an immune modulator, but it also has the effect of producing basic fibroblast growth factor (bFGF). You might say 'So What, who wants more fibroblasts?' Good question. Consider what benefits can be had by colostrum growth factors in a difficult muscle or tendon injury, where *fibroblasts* are the first line of repair. But more importantly and apart from that, both acidic and basic FGF have been long known to stimulate proliferation of muscle cells, and acidic FGF is known to be present in Colostrum. But clearly, the single most important effect of bFGF is its induction of more IGF-1 receptors in muscle, thus paving the way for that tissue to go anabolic.

Remember, *all* that a muscle tissue with IGF-1 receptors needs is just a bit of IGF-1 and away it goes, increasing cellular division, changing the structure of the dividing cells, synthesizing more new protein, increasing efficiency of nutrient uptake. **What this means is anabolism: and anabolism means mass.**

EGF is another characterized growth factor known to be present in colostrum. To say the very least about EGF, it has potent anabolic activity in many tissues, including muscle. Several experiments show that GH

is responsible only up to a point in muscle development, at which time factors such as EGF become increasingly important for continued anabolism. However, it is reasonable to conclude that the primary effect of EGF in colostrum is to radically enhance the gross uptake of many nutrients, perhaps including the peptide growth factors by intestinal cells.

There exist other growth factors in colostrum, which are not even characterized as yet. The Harvard study which is being referred to has found a compound similar to a small protein growth factor called PDGF. The other study reveals two brand new compounds similar to EGF and other compounds called TGF-A & B. The role of these compounds coupled with IGF-1 have been found to be biochemically unsurpassed in their role in cartilage and muscle repair.

### **Conclusion**

**You know what you want because you know what you need. What you are interested in is satellite muscle cell *division and differentiation*. There is no other compound in the universe, to date, which can help you with that problem better than IGF-1.**

**NOT STEROIDS. Not biotechnology and it's genetically engineered GH. Not 'releasing factors'. Not even a strict, pure amino acid and glycogen diet!**

**Plain and simple, IGF-1 is the end-all and the be-all of anabolic peptide growth factors.**

**Where can you get it?**

**COLOSTRUM. That is you can only get IGF-1 in colostrum unless the FDA approves a genetically engineered form for over-the-counter sale. And we all know this is something they are not likely to do with the millions biotechnology has riding on keeping this product controlled and expensive!**