UNIQUE OPPORTUNITY!
Our Genacol Direct Access compensation plan will improve your quality of life!

OUR PRODUCTS
Improve your knowledge on Genacol® Extra, Genacol® Derma and Genacol® Activ.

THE IMPORTANCE OF COLLAGEN!
Learn more on collagen, the AminoLock® Sequence Technology and the clinical studies that show their efficiency.
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Dear Readers,

Science evolves at a rapid pace and scientists around the world are busy finding valuable solutions to many ailments that plague humankind. However, it is not always easy to sift through the numerous findings that reach us through various media whose quality and validity is sometimes hard to assess. This booklet is designed to provide you with accessible and reliable scientific explanations concerning joint pain and its causes. More specifically, it deals with the problems that arise from a lack of collagen.

Indeed, you will learn how vital this protein is for the body. In fact, as we humans age, our bodies produce less and less collagen. The decline begins in the thirties and becomes much more significant from the fifties onward. The lack or inadequate use of collagen by our bodies participates in the aging process and its associated symptoms. After reading this booklet, you should better understand why a collagen hydrolysate supplement, such as Genacol, offers the kind of help that you may need. Genacol represents a reliable solution that has been appreciated for over 10 years in Canada and in over forty countries around the world. The beneficial action of Genacol on joint health is scientifically proven by two independent clinical studies.

Happy reading!

Pierre S. Haddad, Ph.D.
We are about to discover a protein that has in its structure an invaluable potential for health and well-being. Science acknowledges that collagen is the most abundant protein in the human body.

This multiple-benefit protein represents about a quarter of the proteins in the body. It plays a role of support, without exception, for our tissues and organs, offering our body the necessary structure to perform its vital functions. Collagen is also essential for the proper healing of wounds.

Unfortunately, the aging process combined with modern life elements such as an unhealthy diet, stress and lack of exercise affect the equilibrium of this protein. This situation creates a major impact on multiple aspects of our health, making our body more vulnerable and potentially prone to illness.

Scientific breakthroughs in relation to the degenerative consequences of aging, offer an interesting future perspective for those who want to improve their health and quality of life.
Collagen is, to the tissues in the human body, what steel rods are to reinforced concrete. If the steel rods of the frame are weak, all the structure weakens. More than twenty kinds of collagen are found in the tissues of the body. Each type of collagen contained in our body possesses a distinct sequence of amino acids, but most share a large degree of similarity. Let us examine collagen types I to V, which represent 99% of all the collagen found in our body. They are present in our body as follows:

**ROLES OF COLLAGEN IN THE HUMAN BODY**

- **TYPE I**: Bones, tendons, ligaments, skin and several internal organs;
- **TYPE II**: Cartilage and the vitreous structure of the eye;
- **TYPE III**: Skeletal muscle and the walls of blood vessels;
- **TYPE IV**: The majority of internal organs;
- **TYPE V**: Most connective tissues (supportive role; often associated to type I).

Collagen is produced by many types of specialized cells called fibroblasts and is gathered in the connective tissues. The biological role of collagen has a double function. On the one hand, together with elastin and glycoproteins, it is responsible for the cohesion of tissues and organs. On the other hand, collagen gives these tissues and organs hydration, resistance and flexibility properties.

With respect to connective tissues, they form a network rich in collagen, which is found practically in every part of our body. They mainly serve as support, filler, joint, insulation or protection. Without this connective tissue matrix rich in collagen that acts as “a sort of glue that keeps our body together,” we would be a shapeless mass of tissue.

As previously mentioned, aging and lifestyle directly affect several metabolic processes such as our body’s ability to synthesize new proteins, including collagen. According to the Nutrition and Food Science Centre of the University of McGill, our body has to completely rely on food and other dietary sources to provide the essential amino acids needed to synthesize new proteins. It is also mentioned that if our body is under stress, due to injuries or degenerative problems related to aging, it would need even more amino acids than it normally does.
During the normal process of aging, we can observe a decrease in the synthesis of collagen proteins. These effects start to appear when we are relatively young. If we analyze the available scientific studies, this decrease starts at age 30 at an average of 1% per year. This phenomenon is accentuated in the fifties. This can result in a loss of strength and cohesion in our tissue and organs, which can reduce our functions. This generates, in the short or medium term, a series of reactions that for most of us emerge as follows:

- Fine wrinkles and wrinkles;
- Lack of muscle tone;
- Muscle soreness;
- Joint and muscular stiffness;
- Slower healing of wounds;
- More frequent fatigue.

Even more ironically, in our early thirties, most of us don’t pay much attention to these discomforts as we do not experience any major health problems or we do not feel strong pain. However, as far as the reduction of collagen in our body is concerned, these problems are just the tip of the iceberg; as they announce, together with aging, direct effects on our health and quality of life.

So, what happens when this situation becomes a problem? To find out, let us analyze how amino acids, found in collagen, can offer an effective nutritional support to the main tissues in our body.
Collagen is present in all multi-cellular organs in our body.

Collagen is the fibrous structural protein that makes up the white fibres (collagen fibres) of skin, tendons, bones, cartilage, and all other connective tissues. It is also found widespread in the gelatinous substances of the body to provide stiffening properties, such as in the vitreous humor of the eye. In other words, collagen is the natural protein that constitutes most of the body’s structural support and is the primary substance of connective tissue. It is this fibrous connective tissue that holds our body together.

Collagen gives to different organs and tissues their strength and their resistance to stretching. Twenty-five percent of protein in the human body and seventy-five percent of our skin are made up of collagen. Collagen is part of the natural composition of our tendons, ligaments, joints, muscles, hair, skin, and vital organs. When there is a lack of collagen in the body, various structures and functions are affected. Weakness, fatigue, aches, pain, and an overall lack of energy are the main symptoms that can be felt from a lack of collagen. In addition, all these symptoms increase with aging.

Besides its numerous structural properties, collagen serves as a main catalyst for growth and it participates in the repair of almost all the body’s tissues. Several diseases caused by aging are related to a lack of this vital protein that is collagen. When there is a lack of collagen, the risk of bad function and disease increase.

The production of collagen in the body slows down insidiously with age. It starts slowing down around thirty and it diminishes considerably around fifty. A lack of collagen, or the inability to use it properly in our body, participates in the early signs of aging.
Proteins in our food contribute to the generation of all the tissues in the body.

When proteins are created in our body, sequences of amino acids of varying length called “polypeptides” are conceived in a specific order determined by our genetic code. The DNA (our genetic code) is our personal library that contains all the necessary information for the production and regeneration of our tissues and organs. Therefore, our DNA plays a major role in keeping one of the best-kept secrets in natural health. This secret is based on twenty amino acids that are the fundamental building blocks from which all the proteins of living organisms are created.

“These twenty amino acids help produce the approximately two million proteins that are estimated to be found in the human body. For example, it is from these twenty amino acids extracted from food that our body can generate the following elements: tendons, cartilage, bones, blood, hair, nails, skin, muscles and nerves. Proteins can also help digestion (stomach enzymes), detoxify poisons and fight illnesses.”

All proteins have a limited lifespan and are continuously renewed. Therefore, according to the regenerative and functional needs our body has, specific enzymes (which can be compared to construction workers) will gather amino acids and use the information in our DNA in order to build new proteins which will carry out specific functions in our body.

Below you will find, as an example, a concise summary of some amino acids found in collagen.

THE VIRTUES OF AMINO ACIDS
SOME AMINO ACIDS FOUND IN COLLAGEN

» ARGinine
- Indispensable to eliminate nitrogen waste products normally generated by the body (for instance, ammonia is toxic for our cells)
- Supports the immune system (helps prevent communicable diseases)
- Helps secrete growth hormone (supports regeneration)
- Helps to regulate protein metabolism

» GLYCINE
- Each three amino acids of the collagen peptide chain is a glycine; it is thus an abundant amino acid that is important for collagen structure
- Has a scarring effect (burns, postoperative trauma)
- Is an inhibitory neurotransmitter in the nervous system and therefore possesses a calming effect
- Participates in the production of creatine in muscle and thus favors muscle energy and healthy contraction
- Has a positive effect against gout (joint pain)
- Participates in the production of bile acids in the liver and thus promotes detoxification

» LEUCINE
- Essential amino acid
- Most abundant amino acid in our body
- Participates in the production of muscle proteins and the healthy use of energy by muscle
- Helps promote insulin secretion to maintain blood glucose equilibrium
- Important for brain and balance functions

» GLUTAMINE
- Plays an important role in the synthesis of DNA
- Helps protect the brain against ammonia toxicity
- Favors better muscle recovery after intense exercise and helps rebuild damaged muscle

» HYDROXYLYSINE
- Part of the main components of collagen
- Promotes skin, joint, tendon and cartilage health
» HYDROXYPROLINE
- Part of the main components of collagen
- Plays a major role in bone and connective tissues

» HISTIDINE
- Essential amino acid
- Primary role in binding of iron in hemoglobin
- Participates in controlling acidity

» ALANINE
- Helps generate energy in the liver
- Helps promote insulin secretion to maintain blood glucose equilibrium
- Essential to the synthesis of vitamin B5 (pantothenic acid)

» ISOLEUCINE
- Essential amino acid
- Favors the production of red blood cells
- Helps promote blood glucose equilibrium

» LYSINE
- Essential amino acid
- Large amounts in muscle
- Helps the immune system work properly
- Important for collagen production and healthy bone generation
- Favors calcium absorption
- It is one of the most important amino acids for the elderly

» PROLINE
- Major constituent of collagen (collagen is the main reservoir of proline, representing 50% of all the proline in the body)
- Stimulates scarring through collagen production

» TYROSINE
- Its concentration in muscle is considerable
- Precursor for many neurotransmitters important for the proper functioning of the central nervous system
- Together with other factors, it helps reduce problems related to attention deficit

» VALINE
- Essential amino acid
- Source of muscular energy
- Stimulates the nervous system and favors intellectual performance
Cartilage is dense and flexible connective tissue that is very rich in collagen (almost 67% of its dry weight). It is found at the junction of several bones of the skeleton. It looks like rubber and absorbs the impact caused by movement. It is cool-white and smooth and about 3 mm thick. There are many kinds of cartilage; the one found in the knees or the discs between the vertebrae is very rich in fibres and contributes to resisting friction during movement. In children, we find a growth cartilage that is later transformed into bone, allowing the bone to lengthen.

Cartilage is a living tissue. It is comprised of cells called chondrocytes (cartilaginous cells) that undergo production and destruction cycles to maintain the balance of cartilage. After trauma, injury or a disease such as arthritis, destruction may override production of chondrocytes. The most common form of arthritis is osteoarthritis, also known as “degenerative arthritis.” It is associated to a selective destruction of cartilage cells in joints and commonly affects the hips, knees, shoulders and spine. The lack of cartilage causes slower healing, protects less against friction between bones, which can cause pain and limit joint mobility.

The main reasons of the selective destruction of cartilage cells are caused by two phenomena. Firstly, the normal aging process promotes the destruction of chondrocytes and collagen is therefore reduced. Secondly, sometimes fragments of cartilage break off and end up in the fluid of the joint. The immune system

IMPORTANCE OF AMINO ACIDS IN CARTILAGE

It has been acknowledged that a hydrolyzate supplement of collagen, such as the collagen found in Genacol® Direct products, provides amino acids contributing to cartilage formation.

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<th>Component</th>
<th>Percentage</th>
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<td>Collagen</td>
<td>67%</td>
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<tr>
<td>Others</td>
<td>32%</td>
</tr>
<tr>
<td>Glucosamine</td>
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Composition of cartilage
then recognizes this and causes an inflammation and attacks the cartilage, thus promoting its degeneration.

Therefore, even if a problem occurs in a single place, for example one wrist, the other wrist, knees, shoulders, hips and the back can also hurt.

Arthritis affects nearly 5 million people in Canada and more than 60 million in the United-States. It causes 6% of all hospitalizations in Canada. During the last 25 years, the costs related to conventional treatments (medication, surgery) for arthritis rapidly increased worldwide from 65 billion dollars in 1994, to almost 500 billion nowadays.

Faced with such facts, John Klippel, Medical Director of the Arthritis Foundation, states that it is time to act. Some clinical studies and testimonials have shown that some products, such as Genacol, can offer a natural solution that is the most effective.
THE ROLE OF COLLAGEN IN THE SKELETON

Osteoarticular diseases represent half of all the chronic diseases in people over 60.

Their increasing incidence with an aging population constitutes a major issue. Taking this into account, the United Nations has determined that the next decade will be dedicated to bones and joints.

Without a skeleton, our body would be a mass of soft flesh. The skeleton is made up of more than 200 bones, and carries out four main functions. First, the skeleton supports the body’s weight and works as an anchor point for all the muscles and soft organs. Second, the skeleton plays an important role as a protector. The skull protects the brain, the rib cage protects the heart and the lungs, and the vertebrae protect the spinal cord. Third, the skeleton has a storage function. It contains 99% of the mineral reserves in the body. Finally, it participates in the immune functions, since white and red blood cells are produced in the bone marrow.

During the process of aging, the decrease of collagen significantly affects our bone structure, since our body loses the collagen that is used to sequester minerals in the bones. This critical situation modifies the bones’ rigidity, flexibility and density, making them more fragile.

One of the most common diseases related to bone aging is osteoporosis. It is characterized by a loss of bone resistance, which favors fractures. One of the main markers of bone density is defined by the increase of the blood and urinary levels of C telopeptides of Type I collagen. Type I collagen in bones is similar to steel rods in reinforced concrete. Type I collagen offers the structure onto which bone minerals can bind. Thus, a lack of this type of collagen weakens bones. When bones are more porous, they are more susceptible to fracture during a simple fall that would normally have no consequences. Like arthritis, osteoporosis appears progressively with age.
TENDONS ACT AS STRAPS IN THE BODY

The dry weight of each wall of tendons is made up of more than 95% of collagen. The ends of tendons, which are the most solid parts, are composed almost exclusively of collagen, up to 99%. Our tendons’ properties and functions are directly related to the architecture and quality of the collagen fibres.

Tendons provide an essential support in joint movement. The multiple functions of tendons include attaching muscles to bones, joining and stabilizing skeletal joints, and transmitting muscular force to bone pieces. Tendons also allow muscles to be at an optimal distance from the joint.

Therefore, tendons, together with muscles and bones, form a unique team that constantly works in synergy. The decrease of collagen with aging weakens the area where tendons are attached to the bone. This creates a more fragile area and frequently causes several injuries. For example, a common problem known as tendinitis or tendinosis is frequently associated to a lack of collagen.

In fact, it is important to make a distinction. Tendinitis is an inflammation of the tendons. It has frequently been considered as the cause of tendon pain and loss of force and movement. More recently, researchers have discovered that most people diagnosed with this disease have no sign of tendon inflammation. As a result, medical science has come to consider the difference between tendinitis and tendinosis. Unfortunately nowadays, even both terms are used to describe the same condition. Tendinosis is caused by a collagen disorder in the tissue of tendons and does not involve infiltration of immune cells (inflammation).

Collagen contributes to keep the structure and strength of tendons. When collagen breaks down, small tears appear in the tendon, weakening it and causing pain. Tendinitis notably affects those who perform repetitive tasks in their jobs, sports or daily activities. Another example of a disease related to tendons is bursitis. Bursitis is the swelling of the bursa, a small fluid-filled sac that allows muscles to glide easily over other muscles as well as bones. When you hurt a joint or tendon or use it excessively, the bursa may swell, causing pain, redness and a burning sensation.

The regions most commonly affected by bursitis are the shoulders, elbows and hips. People who suffer from this affection will feel pain, tenderness and stiffness near the affected area. Consequently, certain muscles weaken because the person avoids painful movements such as climbing stairs. Whether one suffers from tendinitis or bursitis, applying ice over the painful areas and letting the painful joint rest can successfully alleviate the discomfort. For chronic conditions or over the long-term, physiotherapy proves to be an important option. Anti-inflammatory drugs are indicated only after a diagnosis of tendinitis has been confirmed (infiltration of immune cells). A hydrolyzed collagen supplement can also represent an interesting nutritional support.
Ligaments are short strands of fibrous connective tissue rich in collagen (almost 80%), representing an extremely solid structure with multiple functions.

Among other functions, ligaments connect bones across joints, but they do not attach bones to muscles, as tendons carry out this function. Certain ligaments are responsible for joint stability, avoiding false movements. This protects the integrity of joints when there is a sprain, and prevents dislocations when there is a forced movement (hyperflexion or hyper-extension). Notably, there is a complex system of eight ligaments that reinforces the knee bones to form a very resistant joint capsule.

Ligaments also serve to attach several organs to the abdominal wall and join other organs with each other, such as the stomach and the spleen.

Moreover, ligaments are very important for the action of chewing food, enabling and facilitating the movement of teeth and jaw-bones. As collagen decreases with age, our ligaments lose their resistance and their flexibility, which can cause a frequent sensation of stiffness in our joints.

Ankles, knees and wrists are the most vulnerable joints in terms of ligament injuries and common sprains. These are generally caused by stretching or tearing one or more joint ligaments. The major symptoms of a sprain are pain, swelling and difficulty to move the joint.
The human body has more than 650 muscles, making up 40% of the body’s weight.

Muscles are made up of cells intertwined by a connective tissue that acts as a support. This tissue, rich in collagen, is one of the main constituents of muscle. It creates a sheath around muscle fibres providing support and protection. Indeed, collagen is an integral part of a system that links muscular cells together and group them. This anchoring system allows muscle cells to adapt to the mechanical distortions they undergo during contraction. Given that the aging phenomenon leads to a reduction in the production of collagen, external and internal links between muscle cells are also reduced, causing deterioration and weakening of muscles as a whole over the years. This situation affects muscle tissue and reduces its capacity to carry out its essential functions.

One of the diseases related to a reduction of collagen in muscle is fibromyalgia. Its diagnosis has been erroneous for a long time due to a lack of knowledge concerning the underlying pathophysiology of this disease and the lack of specific biochemical markers to diagnose it. Although the exact causes of this disease remain unclear, research conducted at the American College of Rheumatology and involving various samples (muscle biopsy, urine and blood test) showed disturbances in collagen metabolism and structure in people with Fibromyalgia.

These disorders are reflected in some cases by a lower amount of intramuscular collagen as well as by a remodeling of the extracellular matrix, with collagen deposits being found around the nerve fibers. This results in a lower threshold for muscle strain (structural and mechanical aspects) and a lower tolerance for pain in sensitive areas (nervous aspect). In a clinical study conducted in a small group of people suffering from fibromyalgia for 2 to 15 years, it was found that taking a “hydrolyzed collagen” significantly lowered the average level of pain; this effect being quite significant in a subgroup of participants.
According to the International Olympic Committee (IOC), it is estimated that the number of consultations in the world due to musculoskeletal (tendons, muscles, bones) sports injuries exceeds 100 million cases per year, 50% of which are related to tendons and ligaments.

The IOC states that these injuries lead to an important decrease in sports performance, reduce functional capacities at work, and have a negative influence in the ability of the general population to exercise. A high percentage of these injuries is difficult to treat and many people suffer from pain and long term problems.

Whether we practice sports occasionally or professionally, the cause of most injuries becomes apparent during the three following actions:

- Intense repetitive movements
- Overworking that leads to a weakening of bones, cartilage, tendons, ligaments and muscles
- Insufficient muscle warm-up before training

Available research demonstrates that when practicing sports, the massive pressure on your joints causes two major phenomena: it dehydrates tissues, rendering them more vulnerable, and it increases the risk of trauma. Therefore, all sports involving repetitive movements and sudden high-speed stops can cause damage. Thus, when there is an impact, tendons, ligaments, muscles and cartilage may become cracked, notably on the surface of joint tissues, generating weaker scarred tissues.
Sleep is not an interruption of activity in the body; it is just another form of activity. It is indispensable for recovery.

Research has shown that most of the metabolic work necessary to repair the body takes place when we sleep. Sleep is divided into several phases or stages. The first relates to the induction of sleep, the second marks the beginning of sleep. Phases 3 and 4 are characterized by long and regular brain waves; this is deep sleep. The last phase is associated with fast eye movements and corresponds to the period when dreams occur. It is during deep sleep (stages 3 and 4) that the body releases growth hormone. This promotes growth in youth as well as regeneration and tissue repair in adults. The sleep cycle repeats itself in the same manner over many hours, such that we go through most sleep phases several times during one night.

Therefore, in order to strengthen muscles, tendons, ligaments and cartilage, and to regenerate the organs and skin, the body has to go through a process of protein synthesis, which takes place precisely during the deep sleep phase. Unfortunately, protein synthesis becomes less efficient with aging and the regeneration process slows down. Hydrolyzed collagen proves to be an excellent nutritional supplement for the body, as it supplies it with the sequences of amino acids that support the regeneration and synthesis of new proteins during sleep. Certainly, sleep represents the basis of regeneration and it is essential to our health.

Conclusion: Better sleep equals better recovery.
More than 90% of skin’s dermis is made up of collagen.

Fibroblast cells in our body produce collagen, which is the base molecule that holds our skin together. With aging, the decrease in collagen production generates a loss of hydration and a thinning of the skin, which lead to the appearance of wrinkles.

Gradually, the capillary tissues in the skin become thicker and less efficient, reducing the skin’s ability to retain nutrients and water. Since skin is less healthy, there is a greater risk for it to develop stretch marks, brown spots and infections, as its ability to work as a barrier against bacteria and viruses is weakened.

The body’s production of skin collagen begins to decrease around the age of thirty. This process starts speeding up in our fifties. Many studies have shown that our natural production of collagen could decrease at a rate of 1% per year after the age of thirty. So, by the time a person reaches 55, they could lose 25% of their collagen production capacity. By the age of 70, the loss could reach 40% and more.
Genacol is a hydrolyzed collagen product, created by a unique enzymatic and manufacturing process. This process is called AminoLock® Sequences Technology.

The unique manufacturing procedure, called AminoLock® Sequence Technology, is an exclusive approach developed by the research and development department of Genacol Group and consists of an enhancement of certain amino acids of collagen. Genacol® is manufactured in respect of the highest biotechnological standards and complies with all government requirements.

Our Genacol® collagen hydrolysate is a safe, formulated substance that stimulates the production of different kinds of collagen in the body. This bioactive complex, formulated from pure collagen, produces significant results in the human body when used on a regular basis. Genacol® is a unique protein complex and no other collagen product on the market contains its profile and concentration of specific amino acids.

- After twelve years of retail success, Genacol® has become one of the best-selling natural products in Québec.
- Genacol products are internationally available in about forty countries.
- Genacol Group won a Mercador prize in 2008.
- According to Profit 100 Genacol Group is the health company that has shown the greatest growth in Canada from 2004 to 2009 (it ranked 28th position among top Canadian companies!)
- Guy Michaud, President of Genacol Group, was named Entrepreneur of the Year 2010 in the health area, according to the Ernst & Young Entrepreneurship International Competition.
- Genacol Group was a finalist in the “Les Mercuriades” competition in 2011.
- Genacol Group was a finalist in the “Grand Prix Desjardins à l’international” competition in 2011.
- In 2012, the Michaud family received an award given to family businesses that possess great values.
As such, two independent studies have scientifically confirmed that Genacol® Original Formula helps reduce joint pain.

These two trials, one carried out at the University of Liège (200 subjects), and the other one at the Veterans Memorial Medical Center Institution (113 subjects), have shown positive results. When Genacol® was administered, the beneficial effect observed in the subjects with respect to pain was found to be “statistically significant”: this is the best result that can be obtained during a clinical trial.

The study carried out at the University of Liege by Dr. Olivier Bruyère from the Department of Public Health, Epidemiology and Health Economics was entitled “Effect of collagen hydrolysate in articular pain: A 6-month randomized, double-blind, placebo controlled study”. It was published in 2012 in the journal Complementary Therapies in Medicine. To consult the abstract of the study, please visit our Website.

Both trials demonstrated that Genacol® Original Formula provides key nutrients that are clearly beneficial for joint health. This confirms the results of several other studies carried out in the past. However, such studies had to use up to 10 grams of hydrolyzed collagen per day as compared to the 1.2 grams of Genacol®. Therefore, Genacol® hydrolyzed collagen proves to be one of the most promising nutritional products for joint health.
Until now the NHPD’s regulating of manufacturers simply required the manufacturer to hold a Health Canada issued Site License, however unlike a Health Canada issued Drug Establishment License (DEL) or NSF facility certification, there is no on-site inspection, only a paper audit conducted by NHPD officials in Ottawa. According to Health Canada, this is about to change, as on-site facility inspections are to be introduced in early 2013.

PNP Pharmaceuticals has always strived to be a leader in manufacturing excellence, from service, expertise, innovation, and technology. With our new custom designed high tech manufacturing facility, PNP is taking fabrication of Natural Health Products to a whole new level. Our new facility incorporates the latest technology to meet and exceed all GMP requirements to improve efficiencies and overall product quality assurance.

The manufacturing of natural health products can pose significant challenges for a manufacture and without a carefully designed manufacturing environment; product quality can be adversely affected. A facility should be designed to permit cleanliness, orderliness while preventing contamination. Not only should a facility be designed to produce quality products, it should also take into consideration its employee environment to offer a pleasant and comfortable atmosphere in which to work.

SOME OF THE KEY DESIGN ELEMENTS OF PNP PHARMACEUTICALS INCLUDE:
- Zoned high efficiency production air handling systems to accommodate probiotic production.
- Hepa filtered air shower for cleaner production environment.
- Computer controlled/monitored temperature and humidity.
- Hands free computer controlled pharma doors to reduce risk of cross contamination.
- Positive/negative room indicators with alarm to ensure correct room air pressure and flow.
- Over 50 high definition security cameras
- Over 10,000 square feet of glass in the production area for a more desirable work environment.
- Employee fitness center
- Employee outdoor patio area
CONSTRUCTION MATERIALS AND DESIGN MUST BE CAREFULLY CONSIDERED, PARTICULARLY THOSE WITHIN THE PRODUCTION ROOMS. KEY POINTS TO REMEMBER ARE:

- Avoid all right angle surfaces if possible.
- All sills should be sloped.
- Floors should be seamless with a coved base.
- Walls and ceilings must be smooth, non-porous and durable to withstand rigorous cleaning.
- Light fixtures should be flush mount and shatter proof.
- All drains must have back flow prevention.

Facility utilities such as air handling system (HVAC), compressed air, dust collection all play a vital role in ensuring products remain free of any possible contaminant.

The air handling system within the production area should be filtered to prevent foreign particulate from entering the area. The most efficient filters would be a Hepa, and the degree of filtration would be determined by the types of product being manufactured. HVAC design must ensure product material will not be transferred from one room to another via duct work and ventilation grills.

Compressed air systems can be a sure source of contamination if the system is improperly designed. Most manufacturing equipment requires compressed air to operate; careful attention should be made to determine if any of the compressed air comes in direct contact with the product, if so an oil free compressor should be used. Filters that remove moisture from the lines should also be installed and avoid pipe that will corrode in favour of non-corrosive pipe such as stainless steel or aluminum.

Dust collection always poses problems within the manufacturing environment as the generation of dust is inevitable throughout the production process. Without adequate control of the dust, it will compromise the HVAC system, be uncomfortable and harmful for the operators and pose a greater risk for product contamination. A dust collection system should be designed to capture the dust at the source, as opposed to trying to capture the dust after it has become dispersed throughout a large area.

Careful planning and design is crucial to construct a quality manufacturing facility, remember the quality of the product will only be as good as the facility that produces it.
Genacol® Extra is the combination of our two best selling products: Genacol® Original Formula and Genacol® anti-inflammatory into one! This innovative product offers a safe solution for reducing joint pain and efficiently decreasing joint inflammation.

Genacol Extra contains 400 mg of our internationally recognized and scientifically proven Genacol collagen. Our collagen formula is a unique complex of several amino acid sequences conceived by our exclusive AminoLock® Sequence Technology and an additional 200 mg of Curcuma Longa, which is traditionally used in Herbal medicine as a natural anti-inflammatory because it helps alleviate joint pain.

Undoubtedly made with the greatest level of quality ingredients, Genacol Extra targets the discomforts and pain that sore joints embody. Providing a secure health answer without damaging side effects compared to other over the counter meds, Genacol Extra offers natural health benefits while being gentle on the stomach. An alternative that individuals can feel good about taking, Genacol Extra relieves pain naturally, thus revealing a positive difference in your life!

**DOSAGE**

We recommend taking this product for a period of at least 2-6 weeks for optimal results.

There is no restriction for the duration of use and no known side effects for the standard recommended dosage.
This unique process of cellular regeneration contains an anti-aging cream and hydrolyzed collagen capsules to improve skin’s health.

**Genacol® Derma** is an innovative way of preventing the signs of skin aging: as both products are designed to fight moisture loss and collagen breakdown. This exceptional process of cellular regeneration includes advanced ingredients that nourish and moisturize the skin from the inside; revealing healthy skin on the outside!

The **Genacol Derma anti-aging cream** is made to prevent and efficiently diminish the visible signs of skin aging. Nutritional rich, this cream helps reduce wrinkles and fine lines by redensifying the epidermis.

The **Genacol Derma capsules** are formulated to help in the formation of skin’s collagen. Since the body’s collagen production decreases around the age of thirty, **Genacol® Derma** can offer a wonderful solution! Genacol’s collagen is superior and unique thanks to our exclusive **AminoLock® Sequence Technology**. In fact, the collagen contained in **Genacol® Derma** is hydrolyzed to provide a scientifically proven improvement in its absorption by the body.

- Not tested on animals
- Paraben-free

**INSTRUCTIONS**

Take 4 capsules daily, preferably at night. Apply the anti-aging cream on the face and neck, morning and night on cleansed skin.
Genacol®-Activ+ is a vitality tonic that is designed for individuals that lead an active lifestyle.

This product can help make a positive difference in overall mental and physical energy, as it nourishes and supports the body optimally with Genacol collagen, vitamins, minerals, electrolytes and carefully selected herbs. Genacol®-Activ+ is a powerful combination of ingredients that work in synergy to offer you the most health benefits per 30 ml serving!

Genacol®-Activ+ contains twice the daily recommended amount of Genacol collagen (2400 mg or 2.4g)! Genacol’s unique collagen is scientifically proven. Our collagen formula includes a complex of several amino acid sequences conceived by our exclusive Amino-Lock® Sequence Technology.

Collagen is the fibrous structural protein that makes up the white fibres (collagen fibres) of skin, tendons, bones, cartilage, and all other connective tissues. It is the natural protein that constitutes most of the body’s structural support and it is this fibrous connective tissue that holds the body together. Collagen gives strength and flexible properties to different organs and tissues. It supplies the body with essential elements to maintain healthy joints. To summarize, a lack of collagen reduces the integrity of cartilage and makes ligaments lose resistance and flexibility, which can cause a frequent sensation of stiffness and pain in joints. Taking a collagen supplement such as Genacol can provide significant results in the human body when used regularly.

Furthermore, Genacol®-Activ+ contains various vitamins, minerals and electrolytes such as vitamins C, B3 and B12, as well as magnesium and potassium. We have specifically selected the following powerful antioxidant berries and fruits – cranberry, blueberry, black currant, noni and acai– to strengthen overall health and wellbeing!

In addition, we put emphasis on two essential and key ingredients: first, Siberian Ginseng (Eleuthero). Used in Traditional Chinese Medicine to help improve the mental and physical state after periods of stress or effort, Siberian Ginseng is also considered as a superior tonic that helps regulate various bodily functions and increases energy levels. Secondly, Guarana (Brazilian cocoa). Used by Amazon Aboriginals for its energy providing properties, guarana can improve vigilance and increase memory.

Genacol®-Activ+ has a combination of ingredients that can easily provide a wide spectrum of health benefits on a daily basis. With no added sugar, this vitality tonic is essential for people that have active lifestyles!
10 REASONS TO JOIN OUR TEAM

Want to join us and become a retailer? Be part of the most promising network in Québec!

GENACOL® BRAND
1. Brand name recognized by nearly 90% of the people in Québec.
2. Two solid clinical studies that are statistically recognized by scientific publications.

A REMARKABLE SUCCESS
3. A successful history of continued growth since October 2000 thanks to Genacol Original Formula, the #1 natural health product in Québec.
4. Thousands of Genacol Original Formula users in Québec.
5. We have the biggest Facebook Fan Page in the natural products category with nearly 35,000 fans.
6. We are present in over 40 countries including America, Asia, Africa as well as Europe.
7. Recognized President in the world of business and the recipient of many awards including the prestigious 2010 Ernst & Young Entrepreneur of the Year trophy in the health category.

EXCEPTIONAL CONDITIONS
8. A solid infrastructure with headquarters worth over 2 million dollars.
9. A dynamic and credible scientific team with Dr. Pierre Haddad, PhD who has participated in over 100 peer reviewed publications.
10. A solid financial situation allowing access to the best services in the industry including Info Trax, the world’s leader in the compensation system.
GENACOL® DIRECT IS AN INCREDIBLE DIRECT SALES BUSINESS OPPORTUNITY THAT CAN MAKE A POSITIVE DIFFERENCE IN YOUR LIFE!

The Genacol brand has been on the market since October 2000 and our cause remains the same: helping individuals achieve great health through the benefits of collagen.

Our Genacol® Original Formula is the number one natural health product sold in Québec and is scientifically proven by two clinical studies. Genacol products are distributed in over forty countries in the world!

THE REWARDING BENEFITS OF JOINING GENACOL DIRECT INCLUDE:

• Owning your own business
• Supplemental income
• Flexible working hours

The new Genacol Direct division offers you all the experience, notoriety and exceptional products that have contributed significantly to Genacol’s international presence and success.

FOR MORE INFORMATION ON GENACOL DIRECT, PLEASE CONTACT: