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ALPHA FACTOR COLOSTRUM

Another in the Life Sources' Client Education Series

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Alpha Factor

In the past two years, health care practitioners have been hearing a great deal about bovine colostrum, a relatively new food supplement intended to optimize the immune systems of both healthy and chronically ill individuals. Much of the excitement about colostrum has been generated by testimonials, anecdotal reports as well as the marketing efforts of several new supplement manufacturers and distributors.

The past 20 years has also witnessed the publication of over 6000 research papers strongly supportive of both colostrum and its numerous components. The purpose of this paper is to provide a review of the scientific evidence for the clinical application of a promising immune system modulator.

In *Colostrum, Life's First Food* (33), Dr. Daniel G. Clark's basic message, as printed on the back cover of his book, is that "bovine colostrum rebuilds the immune system, destroys viruses, bacteria(17,18) and fungi, accelerates healing of all body tissue, helps lose weight, burn fat, increase bone and lean muscle mass and slows down and even reverses aging." According to Clark and the well-known naturopathic physician, Dr. Bernard Jensen (34), colostrum has a therapeutic role to play in AIDS, cancer, heart disease, diabetes, autoimmune diseases, allergies, herpes(38), bacterial(15), viral and parasitic(1) infections, gingivitis, colds, the flu and much more. Colostrum has antioxidant properties, is anti-inflammatory and is a source of many vitamins, minerals, enzymes and amino acids.

Colostrum Rediscovered

Historically, Ayurvedic physicians have used bovine colostrum therapeutically in India for thousands of years. In the US and throughout the world, conventional doctors used it for antibiotic purposes prior to the introduction of sulfa drugs and penicillin. In the early 1950's, colostrum was prescribed extensively for the treatment of rheumatoid arthritis. In 1950, Dr. Albert Sabin (12,26), the polio vaccine developer, discovered that colostrum contained antibodies against polio and recommended it for children susceptible to catching polio.

What is Colostrum?

Colostrum is the first mammary secretion that a mammal provides for its newborn for the first 24-48 hours. It contains numerous immune system and growth factors as well as essential nutrients, trypsin and protease inhibitors that protect it from destruction in the GI tract. It is estimated that colostrum triggers at least fifty processes in the newborn. Bovine colostrum is biologically transferable to all mammals, including man and is much higher in immune factors than human mother's colostrum. Laboratory analyses of immune and growth factors from bovine colostrum are identical to those

found in human colostrum except for the fact that the levels of these factors are significantly higher in the bovine version. For example, human colostrum contains 2% of IgG while cow colostrum contains 86% of IgG, the most important of the immunoglobulins found in the body. Bovine colostrum contains a blocking hormone to prevent the calf from becoming sensitized to its own mother's immune factors. Studies indicate that all species, including man, benefit from the immune boosting properties of bovine colostrum with no reports of allergic or anaphylactic reactions to date.

It is in a very limited supply because colostrum is only available for a day or two after calving. The needs of the newborn calf must be met first and only high quality colostrum is taken from cows that have been certified free of antibiotics, pesticides and synthetic hormones. Colostrum must be processed at low temperatures so that the immune and growth factors remain biologically viable.

Bovine Colostrum Emerges as Immunity Modulator

Major Colostrum Components

The most important components of colostrum can basically be broken down into two major categories: immune system factors and growth factors. Drug manufacturers have tried to copy (genetically engineer) and market several of the individual components of colostrum, most notably interferon, gamma globulin (7), growth hormone, IgF-1 and protease inhibitors. Biotechnology companies are currently selling IgF-1 for as much as \$800 per 50 cc vial. Some of the following colostrum components may very well be next on the list of major breakthroughs by the pharmaceutical/nutraceutical industry:

Immunoglobulins (A, D, E, G and M) - the most abundant of the immune factors found in colostrum; IgG neutralizes toxins and microbes in the lymph and circulatory system; IgM destroys bacteria while IgE and IgD are highly antiviral (4,23,25).

Lactoferrin - an antiviral, anti-bacterial, anti-inflammatory, iron-binding protein with therapeutic effects in cancer, HIV, Cytomegalovirus, herpes (38), Chronic fatigue Syndrome, Candida albicans and other infections. Lactoferrin helps deprive bacteria of the iron they require to reproduce and releases iron into the red blood cells enhancing oxygenation of tissues. Lactoferrin modulates cytokine release and its receptors have been found on most immune cells including lymphocytes, monocytes, macrophages and platelets.

Proline-Rich Polypeptide (PRP) - a hormone that regulates the thymus gland, stimulating an under active immune system or down-regulating an overactive immune system as seen in autoimmune disease (MS, rheumatoid arthritis, lupus, scleroderma, chronic fatigue syndrome, allergies, etc.).

Growth Factors:

- Epithelial growth factor (EgF)
- Insulin-like growth factor-I and II (IGF-1 and IGF-II)
- Fibroblast growth factor (FgF)
- Platelet-derived growth factor (PDGF)
- Transforming growth factors A & B (TgA and B)
- Growth hormone (GH)

These all help stimulate cell and tissue growth by stimulating DNA formation (21). Genetically engineered versions of IGF-1 and GH are now marketed as anti-aging and AIDS drugs. They are found naturally and in high concentrations in colostrum. Several studies show that these growth factors are capable of increasing T-cell production, accelerate healing, balance blood glucose, reduce insulin need, increase muscle and bone growth and repair while metabolizing fat for fuel (10, 11, 21, 23, 33, 34).

A 1990-study (35) in the New England Journal of Medicine concluded that GH treatment prevented some of the signs of aging. In his study, Dr. Daniel Rudman treated 26 men between the ages of 61-80 with GH. Patients experienced a decrease in overall body fat (of up to 14%), an increase in bone density and lean muscle mass. In addition, their skin was thicker and more elastic. Rudman said the changes were equivalent to those incurred over a 10-20 year period of aging.

Leukocytes - stimulate the production of interferon (16), which slows viral reproduction, and penetration of cell walls.

Enzymes - lactoperoxidase-thiocyanate, peroxidase and xanthine oxidase oxidize bacteria through their ability to release hydrogen peroxide.

Lysozyme - a hydrolyzing agent and immune system booster capable of destroying bacteria and viruses on contact.

Cytokines - interleukins that regulate the duration and intensity of the immune response, are responsible for cell to cell communication, boost T-cell activity and the production of immunoglobulins. Interleukin-10 is strongly anti-inflammatory, especially in arthritic joints.

Trypsin Inhibitors and Protease Inhibitors - prevent the destruction of immune and growth factors in colostrum from being broken down in the GI tract; they also prevent H. pylori from attaching to the walls of the stomach and can have a beneficial role in the treatment of peptic ulcers.

Lymphokines - hormone-like peptides produced by activated lymphocytes which mediate the immune response.

Oligo Polysaccharides and Glycoconjugates - attract and bind to pathogens (Strep., E. Coli (19), Salmonella, Cryptosporidia, Giardia, Entamoeba, Shigella, Clostridium Difficile

Toxins A & B and Cholera) preventing them from attaching or entering the mucous membranes.

Orotic Acid - stops the formation of pyrimidine nucleotides and prevents hemolytic anemia.

Other immune Factors - some of the documented immune factors include secretory IgA, IgA Specific Helper, B Lactoglobulin, Lactalbumin, Albumin, Prealbumin, Alpha 1-Antitripsin, Alpha 1-Fetoprotein, Alpha 2-macroglobulin, Alpha 2-AP Glycoprotein, C3, C4 and Orosomucoids.

Vitamins - A, B₁₂ and E are found in small amounts while traces of all others are also present in colostrum.

Sulfur - a mineral with multiple uses in metabolism and as part of many structural body proteins.

Clinical Applications

For symptomatic adults, clinicians usually prescribe 1000 to 2000 mgs. twice daily of the dried, encapsulated form of colostrum, best taken on an empty stomach with 8 - 12 ounces of water. Preventive doses have not been established but several authors recommend continuous dosing at levels decided upon primarily by the consumer/patient. For those who show no clinical response to colostrum, the dosage can safely be doubled or even tripled as needed until the desired results are obtained. Children can also take colostrum but require proportionately less.

Herxheimer reactions (mainly flu-like symptoms) can occur in up to 40% of the cases but are usually mild and disappear with continued supplementation at the same dosage level. Through hundreds of years of use and over 1000 clinical studies, colostrum has been demonstrated to be completely safe without drug interactions or side effects at any level of ingestion. The following clinical conditions have been well documented to respond favorably to colostrum supplementation:

Viral Illnesses

About 75% of the antibodies in the body are produced by the GI component of the immune system. The ability of AIDS/HIV patients to fight infectious disease is severely compromised by and partially due to damage to the gut from chronic inflammation and diarrhea. Several recent studies (1,5,6,8,13,20,24,25,30) report colostrum's role in the reversal of this chronic problem stemming from opportunistic infections like Candida albicans, Cryptosporidia, rotavirus, herpes simplex, pathogenic strains of E. Coli (19) and intestinal flu infections. All gut pathogens are handled well by colostrum without side effects. Colostrum is composed of numerous factors with strong antiviral activity, especially the immunoglobulins, lactoferrin and the cytokines (8,9,23,25,32).

Allergies and Autoimmune Diseases

PRP from colostrum can work as a regulatory substance of the thymus gland (14). It has been demonstrated to improve or eliminate symptomatology of both allergies and autoimmune diseases (MS, rheumatoid arthritis, lupus, and myasthenia gravis). PRP inhibits the overproduction of lymphocytes and T-cells and reduces the major symptoms of allergies and autoimmune disease: pain, swelling and inflammation.

Heart Disease

Altered immunity may be the hidden cause of atherosclerosis and cardiovascular disease. For example, a type of Chlamydia has been associated with arterial plaque formation in over 79% of patients with heart disease. A recent New England Journal of Medicine article (36) concluded that heart disease is the result of immune sensitization to cardiac antigens. Immune system mediated injury results in myocarditis with lymphocytes and macrophage being the predominant infiltrating cells. Colostrum PRP may have a role in reversing heart disease very much like it does with allergies and autoimmune diseases.

Additionally, IgF-1 and GH in colostrum can lower LDL-cholesterol while increasing HDL-cholesterol concentrations. Colostrum growth factors promote the repair and regeneration of heart muscle and the regeneration of new blood vessels for collateral coronary circulation.

Cancer

The benefits of cytokines in the treatment of cancer was first popularized by the 1985 Steven Rosenberg Book, Quiet Strides in the War on Cancer. Since that time, the same cytokines found in colostrum (Interleukins 1, 6, 10, Interferon G and Lymphokines) have been the single most researched protocols in scientific research for the cure for cancer.

Colostrum Lactalbumin has been found to be able to cause the selective death (papooses) of cancer cells, leaving the surrounding non-cancerous tissues unaffected (37). Lactoferrin has similarly been reported to possess anti-cancer activity.

The mix of immune and growth factors in colostrum can inhibit the spread of cancer cells. If viruses are involved in either the initiation or the spread of cancer, colostrum could prove to be one of the best ways to prevent the disease in the first place.

Diabetes

Juvenile diabetes (Type I, insulin dependent) is thought to be brought about through an autoimmune mechanism, possibly initiated by an allergic reaction to the protein GAD found in cow's milk (2). Colostrum contains several factors, which can offset this and other allergies.

Colostrum IgF-1 can bind to both the insulin and IgF-1 receptors found on all cells. Human trials (39) in 1990 reported that IgF-1 stimulates glucose utilization, effectively treating acute hyperglycemia and lessening a Type II diabetic's dependence on insulin.

Weight Loss Programs

IgF-1 is required by the body to metabolize fat for energy through the Krebs cycle. With aging, less IgF-1 is produced in the body. Inadequate levels are associated with an increased incidence of Type II diabetes and difficulty in losing weight despite a proper nutritional intake and adequate exercise. Colostrum provides a good source of IgF-1 as a complementary therapy for successful weight loss (33).

Athletic Stress

Exhaustive workouts and athletic competition can temporarily depress the immune system, decreasing the number of T-lymphocytes and NK cells. Athletes are therefore more prone to develop infections, including Chronic Fatigue Syndrome. Many of colostrum's immune factors can help significantly reduce the number and severity of infections caused by both physical and emotional stress (33).

The Leaky Gut Syndrome

One of the major benefits of colostrum supplementation is enhanced gut efficiency due to the many immune enhancers that control clinical and sub clinical GI infections. Colostral growth factors also play a role by keeping the intestinal mucosa sealed and impermeable to toxins. This is evidenced by colostrum's ability to control chronic diarrhea caused by gut inflammation related to dysbiosis.

Healing leaky gut syndrome reduces toxic load and helps in the reversal of many allergic and autoimmune conditions. For the healthy individual or athlete in training, colostrum supplementation enhances the efficiency of amino acid and carbohydrate fuel uptake by the intestine. More nutrients are made available for muscle cells and other vital tissues and organs. One of the reasons for the energy boost seen in most healthy individuals who use colostrum as a food supplement is this ability of colostrum to improve nutrient availability and the correction of sub clinical leaky gut syndrome (41).

Wound Healing

Several colostrum components stimulate wound-healing (40). Nucleotides, EgF, TgF and IgF-1 stimulate skin growth, cellular growth and repair by direct action on DNA and RNA. These growth factors facilitate the healing of tissues damaged by ulcers, trauma, burns, surgery or inflammatory disease. The tissues affected beneficially by colostrum's wound healing properties are skin, muscle, cartilage, bone and nerve cells. Powdered colostrum can be applied topically to gingivitis, sensitive teeth, aphthous ulcers, cuts, abrasions and burns after they have been cleaned and disinfected (33,34).

Quality Control

The best quality colostrum is produced organically and is free of pesticides, herbicides, and anabolic hormones like rBST, steroids, antibiotics and other chemicals. Not all colostrum products on the market are biologically active due to improper processing through the use of high temperatures and pasteurization or the formation of colostrum into tablets, a method that requires high pressure and generates heat, destroying biological activity. Colostrum in liquid form is also less than ideal. It is not as concentrated as the powdered versions of the this substance and must be kept refrigerated due to its short shelf life. Preservatives must be added which further dilute and destroy its biological capabilities. Low heat processing, the removal of fat, whey and lactose as well as laboratory testing to insure biological integrity and safety are the rigid standards set for our colostrum.

Life Sources' Alpha Factor is produced in an FDA approved facility and has been assayed at 15+% IgG as opposed to some colostrum products that assay at less than 7%.

You may buy cheaper, but you will not buy better.

General Summary and Scientific References

Colostrum is Life's First Food, according to a prominent medical doctor: Daniel Clark it is "The Ultimate anti-aging, weight loss and immune supplement" Medical Research shows that Colostrum is possibly the one supplement that can help everyone that's ill. And the most important preventative you'll ever find.

Immune Factors: The onset of almost all infections and degenerative disease is preceded or accomplished by lowered immune system function. Medical studies show Colostrum:

- Contains Powerful immune factors (immunoglobulins, lactoferrin, cytokines, etc.) that help fight viruses, bacteria, fungus, allergens, and toxins...
- Combats Leaky Gut syndrome, HIV, Autoimmune, Arthritis, Allergies, etc.
- Helps Balance Blood Sugars helping those who are Diabetic or Hyperglycemic Is rich in TgF-B which supports Cancer therapy, Bone formation, Herpes
- Holds large amounts of Immunoglobulins shown to increase anti-viral, anti-bacterial, anti-yeast & anti-toxin support

Some of what the Scientific Research Community is saying:

"We've reversed 10 to 20 years of the aging process ... fat diminished, muscle tissue increased".

Dr. Daniel Rudman, New England Journal of Medicine
July 1990

"Immunoglobulins from bovine Colostrum is effective in reducing & preventing (viral & bacterial) infections in immune deficient subjects."

New England Journal of Medicine,
July 1992

"Transforming Growth Factors A & B (TGF A & B) in bovine Colostrum were involved in normal cellular activities such as cell proliferation, and tissue repair. Also reported it promoted the synthesis and repair of DNA - the master code of the cell."

Gann,
1984 Vol. 75, 109

"Bovine Colostrum contains high levels of growth factors that promote normal cell growth & DNA synthesis."

Comparative Biochemical Physiology,
1989, Vol. 94A, No. 4 pp. 805-808

"Colostrum is found to contain numerous powerful, naturally occurring, antioxidants."

Pediatric Research,
Vol. 24, No.1 pp. 14-19

"Showed Bovine IgF-1 to be identical to human IgF-1."

Biochemical Journal,
233(1) pp. 207-213

Compare the Growth Factors in:	Bovine Colostrum	Injectable Human Growth Hormone
Product Composition:	100% Natural	100% Synthetic
Overdose Possibilities	None	Possible
Reported Complications:	None	YES: Overdosing
Legality in U.S.	Totally (Natural Food)	Severely Restricted
Monthly Product Cost:	\$40 to \$120	\$800 to \$1,200
Administration:	Capsules or Liquid	Injections

Medical Research has shown that the most important immune and growth factors for humans can be provided from bovine Colostrum. Bovine Colostrum is actually 40 times richer in immune factors than human Colostrum and are identical to human growth factors. Doctors discovered that cows' colostrum contains special glycoproteins that are extremely effective at protecting the immune and growth factors in colostrum from destruction by adult human digestive enzymes.

WHAT IS COLOSTRUM ?

Colostrum (nature's perfect first food) is the pre-milk substance produced from the mother's breasts during the first 24 hours of lactation. Colostrum supplies immune and growth factors and a perfect combination of vitamins and minerals to insure the health, vitality and growth of the newborn.

WHY IS COLOSTRUM EXCEPTIONAL?

Experience has shown that Nature knows best in many cases of healing. Most degenerative diseases in the industrialized world are *Lifestyle Diseases* resulting from not being in harmony with the pace of a less mechanized and polluted world. The chronic diseases with which we are so familiar (e.g. diabetes, certain cancers, nervous conditions, digestive disorders, and cardiovascular problems) are often directly related to what we eat or don't eat, activities that promote illness, stress levels, chemicals, and more.

As we age, we notice it takes us a little longer to fight off a cold or flu, something aches, our energy and enthusiasm have lessened, our skin loses its elasticity and gravity takes its toll on our bodies. Our focus turns to health and anti aging products and knowledge. We each balance our own vitamins, minerals and herbs.. many times unaware of dangerous doses and combinations. We've looked everywhere for an answer. We've asked plants and minerals for something they're unable to provide because they don't have immune systems to produce immune factors and immunoglobulins and they don't have growth factors for muscle, skin and bone.. With killer bugs at our doorstep, we need to look to what was designed specifically for the survival of our species. Aging, illness and death occur with the loss of immune and growth factors in our bodies. Medical science has shown in hundreds of published reports worldwide that these can possibly be replaced in the human body....with bovine colostrum.

WHY DO WE NEED COLOSTRUM AS ADULTS?

As we age, we notice it takes us a little longer to fight off a cold or flu, we become more vulnerable to disease, our energy and enthusiasm lessen, our skin loses its elasticity, we gain unwanted weight and lose muscle tone. After maturity, we gradually lose the immune and growth factors in our body. This impacts us to search for anti-aging and health products and knowledge. We've looked to plants and minerals for an answer, isolating and megadosing on micro-nutrients (vitamins and minerals). Recently we've become more aware, thanks to the media, about the dangers of this hit and miss approach. With killer bugs at our doorstep, we need to look to what was designed specifically for the survival of our species. Aging, illness and death occur with the loss of immune and growth factors in our bodies. Medical science has shown in hundreds of published reports worldwide that these can possibly be replaced in the human body....with bovine colostrum.

Bovine colostrum is not new. In India, for thousands of years, Ayurvedic physicians and the spiritual leaders have documented the physical and spiritual health benefits from colostrum. It is dried and delivered by the milkman and is known for its healing and therapeutic ability. Scandinavian countries have been making a delicious colostrum pudding and dessert topped with honey, for hundreds of years, to celebrate the birth of calves and good health. It was used in the US as an early antibiotic that was in much favor until the discovery of penicillin and other antibiotics.

In the late 18th Century, Western scientists began to study colostrum and document its benefits for survival, growth and development for the newborn. Today, there are of thousands published scientific and clinical studies of major health benefits associated with colostrum.

WHAT DOCTORS HAVE TO SAY ABOUT COLOSTRUM

Colostrum has a virus antibody that acts against viral invaders. A wide range of antiviral factors were acknowledged to be present in colostrum. *This research was done at the US Government's Center for Disease Control in Atlanta, Georgia.*

- Dr. E.L. Palmer, et. al.; *Journal of Medical Virology*

Colostrum contains Non Specific Inhibitors that inhibit a wide range of respiratory illness, notably Influenza viruses. Colostrum is specifically cited for its unique effectiveness against potentially deadly outbreaks of Asian Flu viruses that emerge from animal/human mutations.

-Drs. Shortridge, et.al.; *Journal of Tropical Pediatrics*

Glycoproteins, in bovine colostrum, inhibit the attachment of the Helicobacter Pylori bacteria that cause stomach ulcers. Colostrum contains significant amounts of Interlukin-10 (a strong inflammation inhibitory agent), found significant in reducing inflammation in arthritic joints and injury areas.

-Dr. Olle Hernell, At the University of Ulmea, Sweden; *Science*

Colostrum and breast milk (from cows and humans) stimulates the newborn's immune system; as yet, unidentified proteins speed the maturation of cultured B Lymphocytes (type of white blood cell) and primes them for production of antibodies.

-Dr. Michael Julius Of McGill University, Montreal; *Science News*

Human clinical study: Immune factors in cow colostrum, when taken orally, are effective against disease-causing organisms in the intestinal tract. Ingestion of bovine colostrum's immunoglobulins may be a new method of providing passive immunoprotection against a host of gut-associated disease causing antigens (viral and bacterial).

-Dr. R. McClead, et. al.; *Pediatrics Research*

Studies with human volunteers found that the preservation of the biological activity of IgG (Immunoglobulin), in the digestive secretions of adults receiving bovine colostrum orally, indicates passive enteral (intestinal) immunization for the prevention and treatment of acute intestinal diseases.

Dr. L.B. Khazenson; *Microbial & Epidemial Immunobiology*

Colostrum stimulates the lymphoid tissue providing benefits in aged or immunodeficient people. Nature has used the oral route for the development of the immune system since the origin of mammals (safe and effective). Oral

administration of immunofactors is simple, inexpensive, free of side effects and may be vastly beneficial in veterinary and HUMAN medicine, to correct immunodeficiency.

-Drs. Bocci, Bremen, Corradeschi, Luzzi and Paulesu; *Journal Biology*

Immunoglobulin from bovine colostrum effectively reduces and prevents viral and bacterial infections in immune deficient subjects: bone marrow recipients, premature babies, AIDS, etc.

-*New England Journal of Medicine*

Researchers reported that colostrum stimulates maturation of B Lymphocytes (type of white blood cell) and primes them for production of antibodies, enhances growth and differentiation of white blood cells. Similar activity in cow and human colostrum can also activate Macrophages.

-Dr. M. Julius, McGill University, Montreal: *Science News*

Immunoglobulin in colostrum has been used to successfully treat: Thrombocytopenia, Anemia, Neutropenia, Myasthenia Gravis, Guillain Barre Syndrome, Multiple Sclerosis, Systemic Lupus, Rheumatoid Arthritis, Bullous Pampigoid, Kawasaki's Syndrome, Chronic Fatigue Syndrome and Crohn's disease, among others.

-Dr. Dwyer; *New England Journal of Medicine*

PRP, in bovine colostrum, has the same ability to regulate activity of the immune system as hormones of the Thymus gland. It activates an underactive immune system, helping it move into action against disease-causing organisms. PRP also suppresses an overactive immune system, such as is often seen in the autoimmune diseases. PRP is highly anti-inflammatory and also appears to act on T-cell precursors to produce helper T-cells and suppresser T-cells.

-Drs. Staroscik, et. al., *Molecular Immunology*

PRP was found not to be species specific (transferable for human use). Turns white blood cells into functionally active T cells. Results were shown in treatment of auto-immune disorders and cancer. An important Immune modulator stimulates an underactive immune system and tones down an overactive one.

-Drs. Janusz & Lisowski; *Archives of Immunology*

Bovine Colostrum contains TgF-B which has an important suppressive effect on cytoxic substances (anti-inflammatory). Inhibits cell growth of human Osteosarcoma (cancer) cells (75% inhibition). Mediator of fibrosis and angiogenesis (healing of heart muscle and blood vessels), (Roberts et al., 1986), accelerates wound healing (Sporn et al., 1983) and bone formation (Centrella et al., 1987).

-Drs. Tokuyama and Tokuyama; *Cancer Research Inst. Kanazawa Univ. Japan*

Only Retinoic acids, found in colostrum, conferred protection and reduced colonization of the Herpes Virus. Although not a cure, Retinoic acids effectively

reduce the Herpes Virus to levels (1/100 to 1/10,000 viruses remained active after treatment) where the body's immune system could fight off an outbreak.

-Drs. Charles Isaacs, et. al.; *Experimental Biology; Science*

Growth factors in bovine colostrum were found to be very effective in promoting wound healing. Recommended for trauma and surgical healing. External and internal applications.

-Drs. Sporn, et. al.; *Science*

IGF-1, found in colostrum, stimulates bone and muscle growth and nerve regeneration. Also found: topical administration to wounds resulted in more effective healing.

-Drs. Skottner, Arrhenius-Nyberg, Kanje and Fryklund, *Acta. Paediatric Scandinavia*, Sweden

High age is associated with reduced levels of growth hormones: GH and IgF-1. Induction of GH and IgF-1 increase body weight through muscle growth of aged subjects

-Drs. Ullman, Sommerland & Skottner, Dept. of Pathology and Pharmacology, Univ. of Gothenburg, Sahlgren Hospital & HabiVitrum AB, Stockholm, Sweden

Bovine colostrum contains high levels of growth factors that promote normal cell growth and DNA synthesis.

-Drs. Oda, Shinnichi, et. al.; *Comparative Biochemical Physiology*

The failure of chronic wounds to heal is a major medical problem. Drs. suggest that an important role for growth factors is in promoting wound healing. Accelerated healing is possible for treatment with trauma and surgical wounds.

-Drs. Bhora, et. al.; *Journal. Surg. Res*

Cartilage Inducing Factor-A, found in colostrum, stimulates cartilage repair.

-Drs. Seyedin, Thompson, Bentz, et. al.; *Journal of Biological Chemistry*

"Clinical studies show that IgE (Immunoglobulin), found in bovine colostrum, may be responsible for regulating allergic response."

-Drs. Tortora, Funke & Cast; *Microbiology*

"Immunoglobulins (found in colostrum) are able to neutralize the most harmful bacteria, viruses, and yeasts. "

-Dr. Per Brandtzaeg; *Annals of the New York Academy of Sciences*

Reducing viral levels in the body and stimulating natural immune capabilities holds the most promise in helping our immune systems contain the HIV virus.

-Drs. Nowa and McMichael; *Scientific American*

Colostrum contains Retinoic Acid which helps fight Herpes Virus. Also contains Glycoprotein (kappa casein) that protects against the bacteria that cause stomach ulcers.

Dr. Raloff, *Science News*

Concentration of Lactoferrin and Transferrin in bovine colostrum found necessary to transport iron into blood. Highest concentrations of both substances were found in the first milking after birth.

-Drs. Sanchez, et al, *Biological Chemistry*

WHAT IS IN LIFE SOURCES' ALPHA FACTOR COLOSTRUM?

IMMUNE FACTORS:

Medical and clinical studies show immune factors in colostrum fight Viruses, Bacteria, Yeast, Fungus, Allergens and Toxins.

IMMUNOGLOBULINS:

Have been shown to provide a superior defense in both treatment and prevention of viral infections... bacteria and yeast. High quality Colstrum must be certified to contain a minimum of 16% immunoglobulins.

ANTIBODIES:

Colostrum has been shown to contain specific antibodies that may help our body in its fight against specific diseases such as pneumonia, RVS, dysentery, candida, flu, and numerous other illnesses..

PRP (Proline-rich Polypeptide):

Shown to possibly support and regulate the Thymus Gland (bodies' central command for the immune system)... may help calm an overactive immune system and stimulate an underactive immune system

LACTOFERRIN:

A protein that has been shown to transport essential iron to our red blood cells and also keeps harmful bacteria and viruses from getting the iron they need to grow on.

GLYCOPROTEINS:

(Protease inhibitors) A digestive factor that has been shown to help immune and growth factors survive the passage through the highly acidic digestive system.

LACTALBUMINS:

Research indicates tremendous possibilities that Lactalbumins can be highly effective against numerous forms of cancer and viruses.

LACTOBACILLUS BIFIDUS ACIDOPHILUS:

And other friendly flora necessary for the digestion of food and in the reduction of the

growth of harmful bacterial in the digestive system. Shown to effectively combat candida albicans.

CYTOKINE'S: INTERLUKIN 1 & 6, INTERFERON Y AND LYMPHOKINES:

Shown to stimulate the lymph gland and are thought to be highly effective antiviral immune.

GROWTH FACTORS: ANTI-AGING/HEALING

Medical studies have shown the vital growth factors IgF-1 AND TgF A & B and nucleotides from bovine colostrum to be identical to human in composition. Further, it has been shown that they can help stimulate *normal* growth, regeneration and *accelerated repair* of aged, or injured muscle, skin collagen, bone, cartilage and nerve tissues. Helps stimulate the body to *burn fat* for fuel instead of the body's own muscle tissue in times of fasting (diet). Helps BUILD LEAN MUSCLE. Helps provide the raw materials to repair vital DNA and RNA in the bodies' cells. Can help balance blood sugars (non insulin diabetics and hypoglycemia). Can be an effective topical application for burns, injuries and skin rejuvenation.

VITAMINS AND MINERALS:

Colostrum is not a supplement... it is the whole food for the newborn... its combination of vitamins and minerals are naturally occurring and in perfect combination.

HOW SAFE IS COLOSTRUM?:

According to Dr. Robert Preston, with the International Institute of Nutritional Research: Colostrum is safe "in fact, it is so harmless, it has been prepared by nature as the first food for infants. It would be hard to imagine any nutritional substance more natural or beneficial." Through hundreds of years of human use, there have been no reported or known contradictions, side effects or allergies with bovine colostrum. Those with lactose intolerance should have no problem consuming Bovine Colostrum. Please note, that some colostrum labels may contain whey (whey is not colostrum but a milk by-product). High quality bovine Colostrum is collected only from veterinary certified healthy grade A dairy cows that are pesticide and hormone free. Collected only during the first 24 hours after the second calving (and only after the calf has obtained all that's necessary for its' survival). Bovine Colostrum is immediately frozen and shipped to a USDA inspected processing plant where it is gently spray dried to insure a maximum of immune activity. Colostrum is then processed to remove the maximum fat and lactose and laboratory tested to insure the highest quality and purity of content.

JUST HOW DOES COLOSTRUM WORK?

Colostrum is highly beneficial in the unique manner in which it provides the body with its numerous immune factors. Most infectious disease-causing organisms enter the body through the mucous membranes of the intestinal tract.. In order to remain healthy, it is critical that we are able to combat disease-causing organisms: bacteria, viruses, pollutants, contaminants and allergens where they attack us. Clinical research by Dr. David Tyrell, in England, in 1980, revealed that a high percentage of the antibodies and immunoglobulins present in colostrum are believed not to be absorbed but remain in the

intestinal tract where they attack disease causing organisms before they penetrate the body and cause disease. The remainder are believed to be absorbed and distributed to assist in our internal defense processes. It is this combination of action that is believed to make colostrum so unique and effective as an oral supplement.

WHY BOVINE COLOSTRUM ?

Medical research has reported that the most important immune and growth factors in bovine colostrum are not specific only to the cow and can be utilized by humans and other animals. Even more important are reports that colostrum from cows is four times richer in immune factors than human colostrum. And in important research in 1975, doctors discovered that cows colostrum contains special glycoproteins that are extremely effective at protecting the immune and growth factors in colostrum from destruction by adult human digestive enzymes (results that were later supported by human clinical trials). As one prestigious research institute stated: "Bovine colostrum offers tremendous possibilities for providing unparalleled support for the immune system that may be the deciding factor in the bodies war against illness".

HISTORY OF COLOSTRUM

In India, for thousands of years, Ayurvedic physicians and the Rishis have documented the physical and spiritual health benefits from colostrum. They drop colostrum in boiling water to make a candy that is popular, especially with the children. Scandinavian countries have been making a delicious colostrum pudding and dessert topped with honey, for hundreds of years, to celebrate the birth of calves and good health. In the late 18th Century, Western scientists began to study colostrum and document its benefits for survival, growth and development for the newborn. Today, there are 100's of published scientific and clinical studies of major health benefits associated with colostrum.

CONCLUSION: Based on hundreds of medical research reports and scientific studies on colostrum, presented by doctors and scientists from major research centers and hospitals around the world, the presence of such a wide spectrum of immunoglobulins , antibodies and accessory immune factors offer tremendous possibilities in the prevention and recovery of illness. Studies supporting normal cell growth, tissue repair and trauma healing provide unique new possibilities for rejuvenation and give those of us that are growing older real hope that there may be a fountain of youth after all.

References

- 1) Acosta-Altamirano, G., et al., Anti-amoebic properties of human colostrum. *Adv. Exp. Med. Biol.* 1987. 216B: p.1347-1352.
- 2) Binz, K. et al. Repopulation of The Atrophied Thymus in Diabetic Rats by Insulin-like Growth Factor I. *Proc. Natl. Acad. Sci. USA.* 87(10):3690-3694. May1990.
- 3) Boesman-Finkelstein, M., et al., Passive oral immunization of children. *Lancet.* 1989. 49: p. 1336.
- 4) Butler, J. E. Immunoglobulins of the Mammary Secretions. Chapter Five. in: *Lactation: A Comprehensive Treatise.* Vol. 3. Eds. B. L. Larson and V. R. Smith. pp. 217-252. Academic Press. New York. 1974.
- 5) Christopher-Hennings, J., et al., Immunocompromise in gnotobiotic pigs induced by verotoxin-producing *Escherichia coli* (O111:NM). *Infect. Immune.* 1993. 61: p. 2304-2308.
- 6) Doyle, P. S. Anti-Cryptosporidium antibodies inhibit infectivity in vitro and in vivo. *Infection and Immunity* 61(10):4079-4084. Oct. 1993.
- 7) Dwyer, J. M. Manipulating the Immune System with Immune Globulin. *New Engl. J. Med.* 326(2):107-116. Jan. 9, 1992.
- 8) Ebina, T., et al., Prevention of rotavirus infection by cow colostrum containing antibody against human rotavirus. *Lancet.* 1983.29: p. 1029-1030.
- 9) Ebina, T., et al., Passive immunizations of suckling mice and infants with bovine colostrum containing antibodies to human rotavirus. *J. Med. Virol.* 1992. 38: p. 117-123.
- 10) Francis, G. L., et al., Purification and partial sequence analysis of insulin-like growth factor-I (IGF-1) from bovine colostrum. *Biochem. J.* 1986. 233: p. 207-213.
- 11) Francis, G. L., et al., Insulin-like growth factors-I (IGF-1) and 2 (IGF-2) in bovine colostrum. *Biochem. J.* 1988. 251:p. 95-103.
- 12) Haynes, B. F. and Fauci, A. S. Introduction to Clinical Immunology. Part Two. Section 2. in: *Harrison's Principles of Internal Medicine, Eleventh Edition.* Eds. E. Braunwald et al. pp.328-337. McGraw Hill Book Co. New York. 1987.
- 13) Ho, P.C., and Lawton, J.W.M. Human colostrum cells: Phagocytosis and killing of *E. Coli* and *C. Albicans*. *The Journal of Pediatrics.* Vol. 93, No. 6, pp. 910-915.
- 14) Janusz, M. et al. Immunoregulatory Properties of Synthetic Peptides: Fragments of a Proline-rich Polypeptide from Bovine Colostrum. *Molecular Immunology.* 24(10): 1029-1031. 1987
- 15) Kim, K., et al., In vitro and in vivo neutralizing activity of human colostrum and milk against purified toxins A and B of *Clostridium difficile*. *T. Infect. Dis.* 1985. 150: p. 57-61.
- 16) Lawton, J. W. M., et al., Interferon synthesis by human colostrum leukocytes. *Arch. Dis. Childhood.* 1979. 54: p.127-130.
- 17) Majumdar, A. S., et al., Protective properties of anti-cholera antibodies in human colostrum. *Infect. Immune.* 1982. 36:p. 962965.
- 18) McClead, R., et al., Resistance of bovine anti-cholera toxin IgG to in vitro and in vivo proteolysis. *Pedia. Res.* 1982.6: p. 227-231.
- 19) Morris, J. A., et al., Passive protection of lambs against enteropathogenic *Escherichia coli*: Role of antibodies in serum and colostrum. *T. Med. Microbiol.* 1980. 13: p. 265-271.

- 20) Nord, J. et al. Treatment with Bovine Hyperimmune Colostrum of Cryptosporidial Diarrhea in AIDS Patients. *AIDS*. 4(6):581-584. June 1990.
- 21) Oda, S., et al., Insulin-like growth factor-I (IGF-1), growth hormone (GH), insulin and glucagon concentrations in bovine colostrum and in plasma of dairy cows and neonatal calves around parturition. *Comp. Biochem. Physiol.* 1989. 94A(4): p. 805-808.
- 22) Ogra, P. et al. Colostrum Derived Immunity and Maternal Neonatal Interaction. *Annals NY Acad. Sci.* 409:82-92. 1983.
- 23) Palmer, E.L. et al. Antiviral Activity of Colostrum and Serum Immunoglobulins A and G. *J. Med. Virol.* 5:123-129. 1980.
- 24) Ritchie, D. J., Update on the management of intestinal cryptosporidiosis in AIDS. *Ann. Pharmacother.* 1994. 28: p.767-778.
- 25) Rump, J. A., et al., Treatment of diarrhea in human immunodeficiency virus-infected patients with immunoglobulins from bovine colostrum. *Clin. Invest.* 1992. 70: p. 588-594.
- 26) Sabin, A and Fieldsteel, A.H. Antipoliomyelitic activity of human and bovine colostrum and milk. *Pediatrics*, Jan. 1962. pp.105 - 115.
- 27) Sabir, A. B., Anti-poliomyelitic substance in milk from human beings and certain cows. *T. Dis. Children.* 1950. 80: p.866-870.
- 28) Spik, G., et al., Bacteriostasis of a milk-sensitive strain of *E. coli* by immunoglobulins and iron-binding proteins associated with colostrum. *Immunology.* 1981. 35: p. 663-670.
- 29) Stephan, W., et al., Antibodies from colostrum in oral immunotherapy. *J. Clin. Chem. Clin. Biochem.* 1990. 28: p. 19-23.
- 30) Ungar, B. L. P., et al., Cessation of Cryptosporidium-associated diarrhea in AIDS patient after treatment with hyperimmune bovine colostrum. *Gastroenterology* 1990. 98: p. 486-489.
- 31) Wada, N., et al., Neutralizing activity against *Clostridium difficile* toxins in the supernatants of cultured colostrum cells. *Infect. Immun.* 1980.29: p. 545-550.
- 32) Watzl, B., et al., Enhancement of resistance to *Cryptosporidium parvum* by pooled bovine colostrum during murine retroviral infection. *Am. J. Trop. Med. Hyg.* 1993. 48(4): p. 519-523.
- 33) Clark, Daniel G. and Wyatt, Kaye. *Colostrum, Life's First Food*. Salt Lake City: CNR Publications. 1996.
- 34) Jensen, Bernard. *Colostrum: Man's First Food, The White Gold Discovery*. Escondido: Bernard Jensen, 1993.
- 35) Rudman, D.; et al. Effects of Human Growth Hormone in Men over 60 Years Old. *N. Eng. J. Med.* 323:1-6, 1990.
- 36) Lange, Schreiner. Immune mechanisms of cardiac disease. *New England Journal of Medicine*, April 21, 1994. Vol 330 p1129(7).
- 37) Hakansson et al., *Proceedings, Nat. Acad. of Sciences*, Vol. 92, pp. 8064-8068, Aug. 1995.
- 38) Kohl, S. et al., Human colostrum cytotoxicity: antibody-dependent cellular cytotoxicity against herpes simplex infected cells mediated by colostrum cells. *Journal of Clinical Laboratory Immunology*, 1, pp. 221-224.
- 39) Dohm, Elton, et al. IGF-1 stimulated glucose transport. *Diabetes*, Sept. 30, 1990, pp. 1028-32.

40) Sporn, et al. Polypeptide Transforming Growth Factors (TGF A & B) and Epithelial Growth Factor isolated from bovine colostrum used for wound healing in vivo. *Science*, 219, pp. 1329-31, 1983.

41) Heinerman, John. Dr. Heinerman's Encyclopedia of Anti-Aging Remedies. Paramus:Prentice Hall, 1997; pp.85-86.

The following referenced material includes direct quotes and represents only a small portion of the research conducted re: colostrum.

Dohm, G. Lynis, et al, Sept. 1990, *Diabetes* Vol, 39. "IGF-1--Stimulated Glucose Transport in Human Skeletal Obesity and NIDDM." "Based on the observation that insulin-like growth factor 1 (IGF-1) can stimulate glucose utilization in non-diabetic subjects... IGF-1 might provide an effective acute treatment for the hyperglycemia of NIDDM." "Presence of IGF-1 receptors in human muscle, with IGF-1 binding being 24% that of insulin. There was no change in IGF-1 bind in muscle from obese or diabetic subjects..." **"IGF-1 stimulated glucose transport approximately twofold..."**

Mero, Antti; et al. The Dept. of Biology of Physical Activity, Univ. Of Jyvaskyla, Finland. *The American Physiological Society*. 1997. Effects of bovine colostrum supplementation on serum IGF_1, IgG, hormone, and slaiva IgA during training. Bovine colostrum supplement increased serum IgF-1 concentration in athletes during strength and speed training.

Antonio, PhD, CSCS, Jose. *Muscle & Fitness*. May 1998. BODY BUILDING SCIENCE – From the Weider Research Group. Can Bovine Colostrum Enhance Levels of IGF-1? **Studies indicate that bovine colostrum supplementation can increase levels of IGF-1.**

Gil, Angel, Sanchez-Medina, 1981, *Journal of Dairy Research*, Vol 48 Vol. pp 35-44. "Acid Soluble Nucleotides of Cow's, etc.": **Bovine Colostrum was found to contain seven different nucleotides which are important for normal cell function and repair.**

Ballard, Neild, Francis et. al., 1982, *Journal of Cellular Physiology*, 110 pp 249-254. "The Relationship Between the Insulin Content and Inhibitory Effects of Bovine Colostrum on Protean Breakdown": **Insulin-like ingredient in bovine colostrum (IgF-1) slows protein breakdown. Protein breakdown was also slowed by addition of colostrum to a cell line known to be unresponsive to insulin, indicating the presence of non-insulin growth factors in bovine colostrum.**

Sporn, et. al., 1983, *Science*, 219 pp. 1329-31: "Polypeptide Transforming Growth Factors (TGF A & B) and Epithelial Growth Factor Isolated from Bovine Colostrum Used for Wound Healing in Vivo" : **Growth factors in bovine colostrum were found to be very effective in promoting wound healing. Implications for trauma, and surgical healing. External and internal applications implied.**

Ballard et. al., *Biochem J*. 1983 V 210, 243-249: Effects of anabolic agents on protein breakdown: **"Protein degradation is inhibited by bovine colostrum.** Anabolic agents such as trenbolone, diethylstilboestrol, and testosterone do not alter rates of intercellular protein breakdown."

Ballard, Francis, Geoffry, 1983, *Journal of Biochemistry*, Vol. 210 pp. 243-249: "Effects of Anabolic Agents on Protein Breakdown in L6 Myoblasts": **Describes how protein breakdown in tissue due to injury is inhibited by several anabolic agents especially an insulin-like substance (IgF-1) found in bovine colostrum.**

Noda, et. al., 1984, *Gann*, Vol. 75, 109-112. **Japanese researchers discovered that Transforming Growth Factors A and B (TGF A & B) in bovine colostrum were involved in normal cellular activities such as embryonic development, cell proliferation, and tissue repair. They also reported it promoted the synthesis and repair of DNA - the master code of the cell.**

Francis, 1986, *Biochemical Journal*, 233(1) pp. 207-213; "Purification and Partial Sequence Analysis of Insulin-like Growth Factor 1 from Bovine Colostrum" **Showed Bovine IgF-1 to be identical to human IgF-1.** Described purification process for extraction of IgF-1 from colostrum.

Roberts, Sporn, Assoian, et. al., 1986, *Procedures of the National Academy of Sciences*, Vol..83, pp. 4167-71: "Transforming Growth Factor Type B: Rapid Induction of Fibrosis and Angiogenesis in Vivo and Stimulation of Collagen Formation in Vitro" Ristow, et al., pp. 5531-5533 Reports BSC-1 growth inhibitor type B transforming factor is a strong inhibitor of thymocyte (T-lymphocyte precursor) proliferation (presence in bovine colostrum confirmed: Noda, 1984)

Seyedin, Thompson, Bentz, et. al., 1986, *Journal of Biol. Chemistry*, Vol. 261, pp. 5693-95: **Reported Cartilage Inducing Factor-A in colostrum and its apparent affinity to Transforming Growth Factor B (in human and bovine colostrum), and its relationship to cartilage repair.**

Francis, GL, et al. 1988, *Biochem J.*, 251: 95-103. Insulin-like growth factors 1 and 2 in bovine colostrum. **"...The sequence of bovine IGF-1 was found to be identical with that of human IGF-1,..."**

Francis, Upton, Ballard, McNeil, 1988, *Journal of Biochemistry*, Vol. 251: 95-103 (printed in Great Britain): "Insulin-Like Growth Factors 1 & 2 in Bovine Colostrum": Two growth factors similar to insulin were purified from bovine colostrum **IgF-1 found to be identical to the corresponding human growth factor. In this experiment protein synthesis was increased and protein breakdown was reduced by administration of the bovine colostrum extracts.**

Oda, Shinnichi, et. al., 1989, *Comparative Biochemical Physiology, A: Comparative Physiology*, Vol. 94A No 4 pp. 805-808: "Insulin-Like Growth Factor 1, GH, Insulin and Glycogen Concentration in Bovine Colostrum and in Plasma of Dairy cows": **Bovine colostrum contains high levels of growth factors that promote normal cell growth and DNA synthesis.**

Tollefsen, Lajara, McCusker, Clemmons, 1989, *Journal of Biological Chemistry*, Vol. 264 No 23, Aug. 15: " Insulin-Like Growth Factors (IgF) in muscle Development": IgF's role in differentiation, repair, synthesis, and their interplay with other necessary growth factors. **IgF-1 only factor that can stimulate muscle growth and repair by itself. Eliminates catabolism and stimulates anabolism at the cellular level.**

Tollefsen, Sherida E, et al. 1989, *The Journal of Biological Chemistry*, Vol. 264, No 23, August 15, Insulin-like Growth Factors (IGF) in Muscle Development. **"...Studies demonstrate that several components critical to IGF action are produced in a fusing skeletal muscle cell line in a differentiation-dependent manner and suggest that both IGF-1 and IGF-2 may be autocrine factors for muscle."**

Watson, Dennis L, et al. 1990, *Journal of Dairy Research*, 59, 369-380, Factors in ruminant colostrum that influence cell growth and murine IgE antibody responses. **"We conclude that bovine colostrum contains cell-growth factors as well as immunomodulatory factors that are able to regulate the IgE response in a heterologous species."**

Allen and Rankin, 1990, *PSEBM* Vol. 194, Muscle Biology Group, Dept. of Animal Sciences and Physiology, Univ. of Arizona, Tucson, AZ. **Reported: A. Fibroblast growth factor (FGF) stimulates proliferation but depresses differentiation of muscle cell growth. B. Insulin Like Growth Factor (IGF-1) stimulates both. C. Transforming Growth Factor (TGF-b) slightly depresses proliferation and inhibits differentiation. Conclusion: When administered in combination these factors induce satellite cells to grow, regenerate and proliferate. Following, these cells will fuse with one another or the adjacent muscle fiber thereby increasing myonuclei numbers for growth and repair. All three Factors found in Bovine Colostrum**

Ullman, et al. *Acta Physiol Scand.* 1990 v 140 p 521-5: Effects of Growth Hormone on muscle regeneration and Igf-1 concentration in old rats: **"High age is associated with reduced levels of GH and IgF-1. Administration of growth hormone raises level of IgF-1 to that of young rats. With increased IgF-1 the reduced protein synthesis of old rats is restored, caused increased muscle tissue in normal and regenerating muscle tissue, and increased maximum contraction force."**

Patureau- Mirand, Posone, Levieux, Attaix, et. al, 1990, *Biol. Neonate* Vol. 57(1): 30-6 **Reported that Colostrum stimulated intestinal protein synthesis.**

Skottner, Arrhenius-Nyberg, Kanje and Fryklund, 1990, *Acta Paediatric Scand.* (suppl) 367: 63-66, **A. IGF-1 resulted in significant body weight gain and significant bone growth. B. Topical administration to wounds resulted in more effective healing. C. Stimulated nerve regeneration**

Dohm, Elton, Raju, Mooney, Pories, Flickinger, Atkinson, 1990, *Diabetes* 39: 1028-32, Reported that: **A. IGF-1 Stimulates glucose utilization. B. IGF-1 receptors in muscle tissue is normally occurring in humans. C. IGF-1 effective treatment for Hyperglycemia**

Tokuyama H, et al. *Growth Factors*, 1990, Vol. 3, pp. 105-114, "Isolation of Two New Proteins from Bovine Colostrum Which Stimulate Epidermal Growth Factor-Dependent Colony Formation of NRK-49F Cells" "...results suggest that BC-1 and BC-2 belong to a new class of mitogen/inhibitors."

Thissen, et. al. *Endocrinology*, 1991 V 129 p 429-35: Evidence that pretranslational and translational defects decrease serum IGF-1 concentrations during dietary protein restriction: "**Dietary protein restriction causes GH (growth hormone) resistance and decreases IGF-1 serum levels.**" (Implications in loss of muscle mass related to protein deprivation).

Marcotty et. al., *Growth Regulation* 1991 Longman Group UK: IgF-1 from cow colostrum: Characterization: "IgF-1 potent stimulator of growth and differentiation of numerous cell types. **Bovine sequence identical to Human IgF-1**

Lundeberg, et.al. W.B. Saunders Co. 1991: Growth Hormone improves Muscle Protein Metabolism: "Human Study indicated: **GH prevented catabolism in muscle and improved whole body nitrogen economy. Investigations of the possible beneficial effects of GH to prevent skeletal muscle deterioration after surgical trauma are advocated.**"

Breese, et. al., *Jour. Gerontology (aging)* 1991 V 46 p B180-7: Influence of age and long term dietary restriction on IGF-1: "**Study of relationship of IGF-1 and lifespan: Demonstrated a decrease in relative IGF-1 concentration with age , as well as dietary restriction. Indicates aging associated with reduced levels in plasma IGF-1 and other GH levels.**" Implications as antiaging.

Bak, Jens Friis, et al. *Am. J. Physiol.* 260 (Endocrinol. Metab. 236): E736-E742, 1991, et al. "Effects of growth hormone on fuel utilization and muscle glycogen synthase activity in normal humans" "...GH inhibited the insulin-stimulated glucose disposal by 27%... and raised the non protein energy expenditures..." "...**GH 1)increases energy expenditures and inhibits glucose oxidation in favor of an increased lipid oxidation, and 2)inhibits insulin-mediated activation of the glycogen synthase in skeletal muscle biopsies...**"

Bricker, BS, Daniel S. *The American Chiropractor*, Nov. 1991. COLOSTRUM: Implications for Accelerated Recovery in Damaged Muscle and Cartilage, Prevention of some Pathogenic Disease. **Bovine colostrum contains unsurpassed repair characteristics for muscle and cartilage.**

Schwade, Steve. *Muscle & Fitness*. May 1992. INSULIN-LIKE GROWTH FACTORS. This Potent Growth Stimulant Found in Mother's Milk May Help Big Boys Grow Bigger. **Human muscle cells have a high affinity for IGF-1.**

Resnicoff, Sell, et al. *Jour. Biol. Chem.* 1993, v 268 p 21777-82: Ethanol inhibits autophosphorylation of IGF-1 receptor and IGF-1 mediated proliferation: "**Findings demonstrate that ethanol at low concentrations markedly inhibits IGF-1 receptor autophosphorylation and IGF-1 mediated cell growth.**"

Chaumeil, Liolet, Kogbe, 1994, *Adv Exp. Med. Biol.* Report of clinical study Vol. 350 pp. 595-599 **Reported effective treatment of eye infections with bovine colostrum lactoserum i.e.: reduction in glaucoma, scaring after injury or surgery, reduction in eye lesions.**

Stokes, Joseph 1994, Children's Hospital, Philadelphia, *Am. J. Physiol.* "**Insulin-like growth factors (IGF's) mediate cell proliferation and differentiation and bind with high affinities and specificities to IGF receptors and IGF-binding proteins (IGFBP's).**" "...IGF's are mitogens for cultured rabbit ASM cells and their actions are most likely mediated through the type 1 IGF receptors. The ASM cells secrete IGF-II and IGFBP-2, and the latter could modulate the actions of the IGF's in these cells.

Xu, Mardell et. al., *Immunology* 1995 vol 85 p 394-9: Expression of functional IgF-1 receptor on lymphoid cells: "**Our studies suggest that biological activities of IGF-1 include direct stimulation of immune cells and that expression of IGF-1 receptor may have a role in the regulation of T-cell function.**"

Bhora, et. al. *Jour. Surg. Res.* 1995 V 59 p 236-44: Effect of growth factors on cell proliferation in human skin.: "**The failure of chronic wounds to heal is a major medical problem. Studies suggest an important role for growth factors in promoting wound healing. Conclusion: Fibroblast growth factor IGF-1 and epithelial growth factor**

are important for wound healing." Treatment implications for trauma and surgical wounds, accelerated healing possible.

Bak, Moller, Schmitz, Medical Endocrinological Dept III, University Clinic of Internal Medicine, Aarhus Kommunehospital, Aarhus, Denmark: GH inhibited the insulin stimulated glucose disposal by 27% and raised nonprotein energy expenditures. Fat Oxidation contributed 71.7% of Energy expenditures during GH administration as compared with 48% without. **Conclusion GH increases energy expenditures and inhibits glucose oxidation in favor of increased lipid (fat) oxidation (burning).**"

Gluckman, Breier and O'Sullivan, Dept. of Pediatrics, Univ. of Auckland, New Zealand: **A. IGF-1 inhibits malnutrition induced catabolism. (If actively present IGF-1 stops the burning of body proteins, {muscle} for energy)**

Ullman, Sommerland, Skottner, Dept. of Pathology and Pharmacology, Univ. of Gothenburg, Sahlgren Hospital & HabiVitrum AB, Stockholm, Sweden: **A. High age associated with reduced levels of GH and IGF-1. B. Induction of GH and IGF-1 increase body weight through muscle growth of aged subjects**

Rosenthal, Brown, Brunetti and Goldfine, Dept. of Pediatrics, Univ. of California, SF Div. of Diabetes and Endocrine Research, Mount Zion Medical Center, Univ. of Ca., SF **A. Presence of FGF (Fibroblast Growth Factor) (in bovine colostrum) inhibits IGF-II's ability to decrease IGF-1 receptors in muscle tissue resulting in a 60-70% increase in IGF-1 binding.**

Pakkenen, R; Aalto, J. *International Dairy Journal*. 1997. Review Paper: Growth Factors and Antimicrobial Factors of Bovine Colostrum. **Colostrum is rich in nutrients, antibodies and growth factors. Colostrum contains insulin, transforming growth factor b and related growth factors. Growth factors promote the growth and development of the newborn... while antimicrobial factors provide passive immunity and protect against infections...**

Klagsbrun, 1978, *Proceedings of the National Academy of Sciences*, 75, pp.; 5057-5061. "Human Milk Stimulates DNA Synthesis and Cellular Proliferation in Cultured Fibroblasts": Growth Factors in milk showed 100 times the potency of serum when tested on fibroblasts.

Shimizu, Webster, Morgan, Blau and Roth, 1986, *American Physiological Society*, Dept. of Pharmacology, Stanford University, School of Medicine: **A. Presence of IGF-1 Receptors in human muscle cells confirmed.**

Tomas, Knowles, Owens, Read, Chani, Gargosky and Ballard, 1991, *Biochem Journal* Vol. 276. pp. 547-554. Reported: **A. IGF-1 peptides stimulate muscle protein synthesis and improve nitrogen balance. B. des (1-3) IGF-1 is at least as potent as the full length IGF-1. C. Bovine Colostrum is natural source of both factors.**

Company Profile

Life Sources, Inc. is a Nevada Corporation with order fulfillment located in Fair Oaks, California and is a member of the NNFA, The National Health Federation, Sacramento Better Business Bureau and the Citrus Heights, California Chamber of Commerce.

The President and Founder is Andrea McCreery, Ph.D.

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