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## **"CELLFOOD DNA/RNA: Amazing Breakthrough in Neglected Essential Nutrition"**

In this era of an increasingly enlightened public about the health benefits of nutritional supplements, there is a new area perhaps more overlooked than any other. This central area of health and nutrition is the ingestion of dietary nucleic acid bases - the essential building blocks of DNA and RNA.

The main reason these highly important nutrients have been neglected is that the body is able to manufacture nucleic acid bases from amino acids and other basic nutrients. In general, if the body can make a substance from other nutrients that substance has not been considered essential. However, under certain conditions, the body is not able to make enough DNA and RNA bases to support the needs of the body's tissues and organs, with a drastic reduction in the potential for health.

Numerous studies in animals and humans show dramatic benefits in health, function, and survival with the supplementation of nucleic acid elements. These effects are so powerful that survival in life threatening assaults ranging from radiation to infection to shock has been markedly increased. From the standpoint of longevity studies, no single method has increased longevity more than supplementing DNA and RNA elements.

For the first time ever, the powerful life and longevity enhancing effects of nucleic acids have been combined with the potent CELLFOOD technology from Deutrel/NuScience. CELLFOOD offers a synergistic enhancement of the desirable properties of the DNA and RNA bases through improved absorption, enzyme support, and providing trace elements vital to the optimum function of metabolic pathways in the cells and tissues.

CELLFOOD DNA/RNA is thus one of the most rejuvenating, immune enhancing, and tissue supporting formulas ever to be released. The wide-ranging benefits to be described are further boosted with a proprietary globally patented laser technology that significantly increases the efficiency of nutrient utilization, making for an unmatched product that cannot be duplicated.

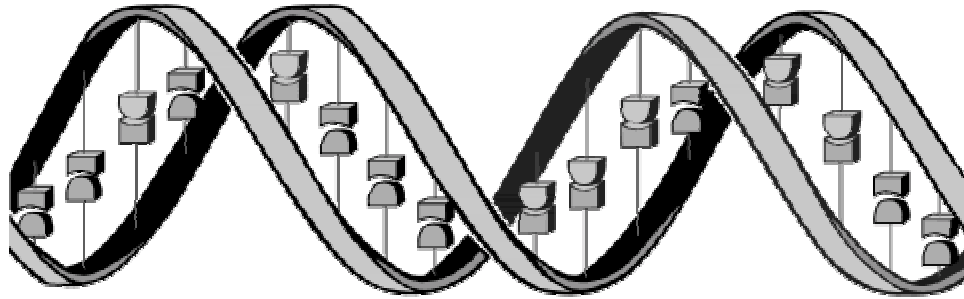
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### **1. Metabolism of DNA and RNA**

Five nucleic acid bases make up the information code of life. Both DNA and RNA share three of the bases -adenine, guanine, and cytosine. In DNA, the fourth base is thymine, whereas in RNA it is uracil. In DNA, each base combines with a five carbon sugar called deoxyribose, hence the term DNA stands for deoxyribonucleic acid. In RNA, each base combines with the five-carbon sugar ribose, thus RNA stands for ribonucleic acid.

The information code in DNA in the cell nucleus is transcribed to RNA, which is then translated to all the enzymes and proteins made in the body. The DNA to RNA to protein translation mechanism makes possible the vast diversity of life on earth.



When DNA and RNA are ingested intact, they are intensely metabolized by intestinal bacteria and the intestinal lining. Over 95% of the pyrimidines bases cytosine, thymine, and uracil are degraded by the intestinal lining before reaching the blood stream. Only about 3% of the pyrimidines make it to the liver for further use in the body. The fate of the purine bases adenine and guanine is even more extreme. Over 99% of the purines are broken down to uric acid before being absorbed into the bloodstream. Therefore only a tiny fraction of ingested DNA or RNA becomes available for the numerous functions required of them throughout all the cells of the body.

In addition to ingested DNA and RNA elements, the body can make DNA and RNA bases from simpler nutrients in the diet. In particular, the amino acids glycine, glutamine, serine, and aspartic acid, along with vitamin cofactors are used to make DNA and RNA bases from scratch.

In order to make nucleic acids from simpler substances requires having all of the precursors and cofactors in adequate amounts at the time of production. In addition, it requires having sufficient amounts of numerous enzymes in the correct proportions and locations in the cell.

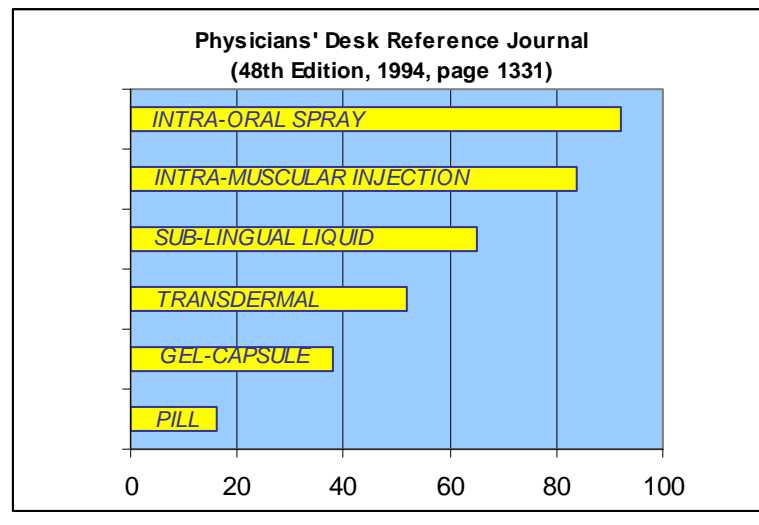
Recent evidence indicates that the body is often not able to make enough DNA and RNA to protect, repair, and regenerate cells to their optimum function. This is especially true for cells that have high turnover rates such as the intestinal lining that may fully replace itself every week. The demand for production may particularly exceed synthetic capacity under conditions of stress in which the demand for greater cell activity and function

becomes acute, particularly for the dynamic populations of cells in the immune system.

When demand exceeds production capacity, DNA and RNA base components become essential nutrients for protecting and preserving health. Numerous lines of evidence will be presented to show the far reaching health benefits of supplementing DNA and RNA during health stresses and even for general well being and longevity.

## 2. Advantages of Oral Spray Delivery System

CELLFOOD DNA/RNA is provided as a highly convenient and biologically active oral spray formula. Providing the nucleic acid base components in this form can increase their absorption into the bloodstream highly significantly. Instead of only 1-3% delivery to the blood stream for systemic use, the oral spray may effectively deliver 90% or more of the nucleic acids ingested to cells and tissues throughout the body.



It is very important to make the distinction between chains of DNA and the individual bases of DNA. Intact DNA strands are long chains of individual bases strung together into a double helix that may have over 10 million bases linked together into a single enormous molecule. Intact DNA strands provide a linear code for the production of proteins and enzymes. Therefore intact strands of DNA bases are information containing and have a small but real potential for influencing DNA information in the cell nucleus. Long chains of DNA require extensive digestion to extract individual bases, resulting in poor absorption and only a small fraction of the bases being available for the body to use.

In contrast, the individual bases of DNA do not give sequence information. They are simply building blocks, much as the letters of the alphabet are the building blocks for words. Their small molecular size makes them highly and rapidly absorbable, greatly increasing their ability to be assimilated and used in cells and tissues throughout the entire body. They are nutritional and not informational. They are very safe and help the body repair and rebuild the DNA and RNA needed for health and cell regeneration. CELLFOOD DNA/RNA only contains the individual bases of DNA and RNA for safety and a high potency of absorption and utilization.

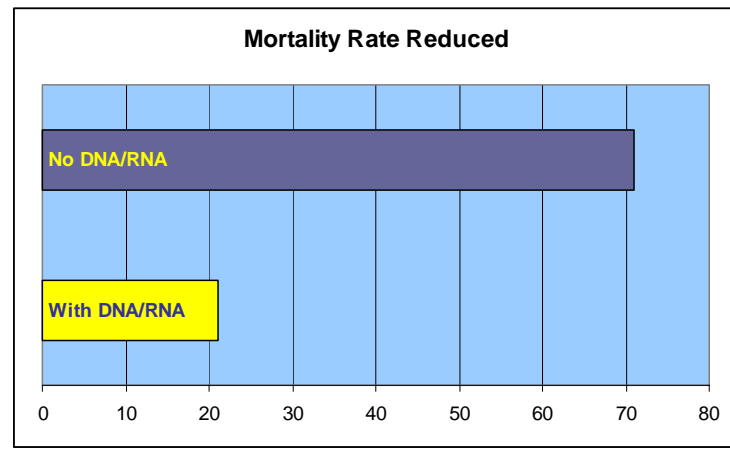
### **3. Research Studies with Supplemental DNA and RNA**

Numerous published scientific studies indicate very significant health benefits from DNA and RNA component supplementation. Almost every system of the body has documentation of improved health, vitality, or function from providing supplements of these fundamentally important cellular elements, from infancy to advanced age. The following is a brief summary from the vast literature supporting the many published benefits of the components of CELLFOOD DNA/RNA.

#### **3A. Infections**

Staph aureus is one of the most aggressive bacterial infections faced in medical treatment. It tends to cause deep-seated abscess forming infections, often associated with extensive tissue destruction, high fever, and resistance to treatment. Surgical drainage is often required to clear pockets of infection. Without surgery, antibiotics alone are often ineffective at eradicating this invasive pathogen. Epidemics of Staph aureus resistant to all antibiotics have become a devastating problem in hospitals and treatment centers around the world.

A study in mice was performed to assess the ability of supplemental nucleic acid components to modify the course of virulent Staph aureus infection. The control animals that received no additional RNA or DNA elements showed a raging 71% mortality. In contrast, the animals that were supplemented with nucleic acid bases by injection showed vastly reduced mortality to 21%.



Candida is a form of yeast that frequently causes infections in humans. If Candida gets into the human bloodstream and persists, medical complications and mortality tend to be very significant. In experimental blood borne Candida infections in mice, the nucleic acid supplemented animals had a much higher survival rate than the untreated control animals.

These experiments suggest that supplemental DNA and RNA bases given in a form with absorption comparable to injection may strengthen the body to combat serious infections. This is likely to occur through improved immune function, although factors related to generally strengthening the vitality of tissues may also be a factor.

The very high absorbability of CELLFOOD DNA/RNA by oral spray is designed to support the immune system and general tissue vitality with a high degree of potency. Such supplemental support can help provide an added measure of resilience to sustain health or recover from infection.

### 3B. Cancer

A study in mice assessed whether RNA supplementation improved survival from an aggressive cancer. The animals received a tumor vaccine and then transplants of a tumor cell line. The animals that only received the tumor vaccine all died within three weeks. In sharp contrast, the animals that received a single 2mg injection of RNA after the tumor vaccine had a 40% long-term survival. Thus the support of an antitumor program with only a tiny single dose of RNA provided a dramatic improvement in survival and outcome.

### 3C. Radiation Injury

Ionizing radiation causes intense free radical generation and molecular fragmentation; the greater the intensity and dose, the greater the harm that occurs to all exposed tissues. The greatest harm tends to occur to cells that are dividing the most rapidly. Radiation is often used for cancer treatment because the tumor cells are more sensitive to radiation than the more slowly dividing normal cells; however, all the cells in the beam path sustain dose related injury.

In a study in mice to determine the protective effects of nucleic acid supplementation, all the animals were exposed to a very high dose of radiation. The survival rate in the control animals was extremely low at 5%. In contrast, the animals that received nucleic acid injections had vastly improved survival - ten times higher at 50%.

This suggests a generally strongly protective effect of nucleic acid supplements for all forms of ionizing radiation exposure, whether therapeutic or accidental. Even persons who use airline travel regularly may benefit from protecting their cells from the relatively higher exposure that tends to occur at altitude.

### **3D. Tissue Regeneration**

In order to sustain health, virtually every tissue in the body must regenerate itself regularly. It is now known for example that even neurons in the brain have the capacity to regenerate. Having adequate supplies of all the nucleic acid bases may be one of the most significant limiting factors on whether a tissue will be able to express its greatest capacity for regeneration and self repair.

A study in rats looked at the ability of the liver to regenerate depending on whether or not injections of nucleic acid bases were given. In this study, the rats had 70% of their livers surgically removed. The animals that received IV nucleic acids showed liver regeneration rates that were significantly greater than the untreated control animals.

Any tissue, in order to regenerate, requires the ability to make DNA and RNA to support the process of making new cells. Providing readily absorbed and assimilated DNA and

RNA bases can be one of the most powerful ways to assist any tissue to repair and renew itself.

### **3E. Wound Healing**

A wound, surgical or otherwise, results in severing the usual integrity of tissue organization. It is a special case of tissue regeneration in which cells migrate into the area of the wound to either regenerate new tissue or to fill the defect with scar tissue. The type of healing depends on the tissue - the liver will tend to restore normal liver cells in the wound, whereas the skin will tend to fill the breach with scar to heal the opening and restore strength.

Several studies in wound healing have assessed the effects of supplemental nucleic acids on wound healing, especially of surgical wounds. Compared to the control group, those receiving the supplements showed more rapid healing, greater tensile strength of the skin, and significantly reduced scarring.

### **3F. Endocrine Gland Repair**

Some of the tiniest organs in the body have the most profound effects on our health and well being. These are the endocrine glands that secrete minute amounts of hormones into the blood without which every function of the body can suffer.

The tissues that are most susceptible to reduced function from nucleotide deficiency have been found to extract high proportions of nucleic acids from blood. These studies have examined the relative amounts of nucleic acid bases a tissue will incorporate if the nucleic acids are given through the GI tract versus being given intravenously.

The incorporation level of the administered nucleic acid bases is measured by giving nucleic acids that have been labeled with a radioactive marker. The amount of radioactivity measured in a tissue when it is given through GI absorption versus IV delivery then gives the assimilation ratio of the two routes of administration. Highly metabolically active tissues that are the most sensitive to stress-induced nucleic acid deficiency are those that have the highest IV: GI assimilation ratios.

In animal studies, the highest IV: GI assimilation ratios were found in the vitally important pituitary, thymus, thymus, salivary, and adrenal glands. The measured ratios ranged from 29-59:1 for IV delivery versus GI absorption. Other dynamic tissues that showed similarly high ratios were the intestinal lining and the lymphoid tissue of the immune system.

The pituitary gland located at the base of the skull has been called the "master gland" because it makes hormones that control the functions of other endocrine glands. It secretes hormones that regulate the thyroid and adrenal glands, the ovaries and testes, and the production of breast milk. The posterior region of the gland exerts control over the kidneys to adjust fluid balances throughout the body. Perhaps most important for longevity, the pituitary also makes growth hormone, that has been shown to have some of the most powerful age-reversing effects of any hormone ever studied. Inadequate nutritional support to this gland can have devastating and far-reaching effects throughout the body.

The adrenal glands, situated atop the kidneys, secrete adrenaline and noradrenaline, the fight or flight hormones. These powerful hormones increase heart rate and blood flow to muscle so that the body is immediately prepared for vigorous physical activity. In our ancestral past, this rapid preparation was a key to surviving in a hostile environment. However, modern living often puts a chronic stress on the adrenal glands, the myriad stimuli that surround us tending to keep the fight or flight mechanism constantly activated. The result is often varying degrees of adrenal burnout, exhausting the reserves of the gland to make the fight or flight hormones when really needed. Burned out adrenals give rise to a chronic low energy state, fatigue, and poor stress tolerance, like depleted batteries that fail to get recharged. These glands are especially prone to nucleotide deficiency under chronic stress, a condition that CELLFOOD DNA/RNA can help to restore, much as giving a long needed recharge to a nearly totally drained battery.

The thymus gland, residing behind the breastbone, is often considered the organ of rejuvenation and longevity. It is the gland in which the T cells of the immune system are formed and given identity. Upon release it is the T cells in particular that help find and destroy cancer cells and cells that have become afflicted with viruses. The thymus gland tends to shrink with time, yet specific supplementation has been found to bring this vital organ

back to more youthful function. In particular, providing nucleic acid bases for this gland with very dynamic cell turnover can significantly rejuvenate this gland and its life preserving activities.

The thyroid gland, at the base of the neck in front of the windpipe, produces thyroid hormones, the main control mechanism for setting basal metabolic rate. In some circles it is believed that we are in the midst of an epidemic of undetected deficiency of thyroid function. Tests of thyroid function may not show overt clinical disease, but low-level deficiency can significantly reduce quality of life. Effects are subtle and can include generally low energy, sluggish bowel function, lack of initiative, tendency to depressed mood, and weight gain with great difficulty losing the added pounds. Dietary iodine and the amino acid tyrosine are important building blocks to make thyroid hormone naturally from the gland. In addition, correcting insufficient nucleic acid production under stress will also support recovery of a sluggish gland.

The salivary glands reside in several pockets in the mouth. Although not as essential as the other glands to sustain life, they provide a vital role in the first stages of preparing food for complete digestion. These metabolically active glands also require a rich supply of nucleic acids to maintain adequate salivary flow.

CELLFOOD DNA/RNA can thus be a very powerful tonic to sustain and boost the functions of the most vital glands in the body. These glands set our level of energy, our ability to respond to stress, our capacity to maintain strong immune defenses, the hydration of our bodies, and a wide range of hormone balances essential to a high quality of life.

### **3G. Intestinal Integrity, Maturation, and Bowel Flora**

The intestinal lining replaces all of its cells every seven days. Only a single layer thick, this lining is highly dependent on a sufficient supply of nucleic acids to completely regenerate itself every week. If nutritional support is inadequate, defective regeneration of the intestinal mucosal lining impairs the enzymatic stages of digestion, which can lead to a vicious cycle of deteriorating digestion and nutritional status.

In a study in young rats with chronic diarrhea, the effects of nucleic acid supplementation was tested. In the untreated animals the intestinal villi, finger-like absorptive projections, showed a dramatic reduction in height, like a forest that had been chopped down to stumps. The intestinal lining cells showed a drastic reduction of digestive enzymes, the essential final step of digestion that breaks nutrients down to the building block levels that the body can use. These animals were clearly failing to thrive. Upon administration of supplemental nucleic acids, the appearance of the intestinal lining greatly improved, with regeneration of the height of the absorptive intestinal villi. In addition, the enzyme content and function of the intestinal lining also greatly improved, permitting the animals to recover and thrive robustly.

Human infants also require dietary nucleotides for optimum health, development, and well-being. Human breast milk has a significantly higher content of certain nucleic acid bases than does cows milk. Infants fed formula milk instead of breast milk have been found to have pathological intestinal bacteria that greatly increases their risk of outbreaks of diarrhea; especially in developing countries, such outbreaks can be life threatening.

Studies have shown that if formula milk is supplemented with a nucleic acid profile similar to that in breast milk, infants thus fed have a much healthier profile of intestinal bacteria, typical of infants that have actually been breast fed. In the nucleic acid supplemented infants, the incidence and severity of diarrhea is reduced significantly to the level seen in breast fed infants. One of the most vital components of breast milk that confers its health and developmental advantages over formula milk thus appears to be its higher content of nucleic acids, making a strong case for such supplementing of all formula milk.

### **3H. HDL Cholesterol Levels**

An additional finding in infants who received nucleic acid supplementation was an improvement in their blood lipid profiles. In particular, the infants receiving added nucleic acids were found to have higher HDL cholesterol levels, the cholesterol fraction that protects against cardiovascular disease the higher the level. It is possible that establishing higher HDL levels early in life may confer an ongoing tendency to cardiac protection.

### **3I. Growth and Development**

Studies in young laboratory animals have assessed the effects of supplementing DNA and RNA elements. Compared to control animals, the supplemented animals grew, developed, and increased muscle mass at a greater rate. Other vital proteins were also built more readily in the treated animals. The intestinal lining in particular matured more robustly in the supplemented animals. Research thus far indicates that the tremendous need for nucleic acids in growth and development is strongly beneficially supported through supplementing these vital nutritional elements.

### **3J. Cellular Immunity**

Cellular immunity refers in particular to immune cells that have the role of identifying cells in the body that have become abnormal, so that the abnormal cells can be removed. The main cellular changes sought through the cellular immune system are the development of cancer cells or various types of intracellular infection. The goal of the cellular immune system is to eliminate cancer cells or infected cells before they can become established in the body to cause serious illness.

The main effectors of cellular immunity are cells that arise in the thymus gland. These cells are often called T cells for their thymic derivation, of which there are several types with varying functions. A special type of T cell called a cytotoxic T cell has the role of finding and sticking to abnormal cells, then releasing substances that selectively digest and clear the renegade cells.

Whereas cytotoxic T cells are generally active in seeking and clearing a wide range of abnormal cells, natural killer cells have a more targeted mission: seeking and destroying any cell that has become a cancer cell. The integrity of cellular immune function, most especially natural killer cell function, is the first line of defense of preventing tumor cells from establishing a stronghold in the body. Many studies have correlated reductions of cellular immune and natural killer cell function with increasing risks of developing cancer; some scientists feel that cancer is primarily a problem of inadequate cellular immunity.

Cytotoxic T cells, natural killer cells, and other types of T cells are also known as lymphocytes. These cells are a

major component of the body's lymphoid tissues that protect us from infections and cancers of many types. In addition to the T cells of several types there are also B cell lymphocytes whose role is the production of antibodies. Unlike T cells that act directly cell-to-cell, antibodies are released into the bloodstream to hunt down specific infectious, toxic, or tumor cell molecules. Lymphoid tissues that coordinate the functions of the immune system include the spleen, tonsils, lymph nodes, Peyer's patches widespread throughout the intestines, regions of the bone marrow, and most importantly the thymus gland.

The lymphoid tissue and especially cellular immunity has been found to be highly vulnerable to nucleic acid depletion under conditions of stress. In other words, at the time of greatest need for protection, inadequate supplies of DNA and RNA bases can weaken the ability of the body to respond to the threat. An insult or tumor or infection the body might otherwise easily handle can escape control if the lymphoid does not have adequate nutrition to respond.

Numerous studies in animals and humans have shown that supplementing nucleic acid elements has profoundly beneficial effects on boosting the function of lymphoid tissue. In part, the reason for this is that lymphoid tissue is highly dynamic such that cells that have become sensitized to microbial invaders or cancer cells need to divide rapidly to make an army of specifically targeted cells to eliminate the invader. A rich supply of nucleic acids, often beyond that the body can readily make, may be required for all the activities required for expanding the cells that prevent a minor invasion from becoming an overwhelming infection or uncontrolled malignancy.

Published studies have particularly demonstrated that cellular immunity is significantly strengthened with nucleic acid supplementation. Research that has examined natural killer cell function has shown especially dramatic effects on increasing the activity and function of these tumor surveillance and elimination cells. Improved health of body tissues in general and enhanced cellular immunity in particular, likely accounts for the vastly improved outcomes observed in the face of a wide range of minor to life threatening insults.

### **3K. Memory Enhancement**

It is not generally well recognized that forming long-term memories requires significant quantities of nucleic acids. Especially the availability of an adequate pool of RNA is needed to manufacture new proteins that are essential to memory function. Although other support nutrients are an important factor, optimum memory function is not possible without a rich supply of nucleic acids.

Many studies in animals and humans have found a dramatic improvement in memory function with nucleic acid supplementation. Whether it is the ability to remember the right pathway to get through a maze for a prize of cheese, or to remember facts and figures, giving supplements of DNA and RNA elements has highly significantly increased performance.

Perhaps most dramatically, one researcher has focused on giving nucleic acids to persons with dementia. Even with advanced cases, if he went to high enough delivery levels to his patients, in almost every case memory improvement was very significant. The doctor reported that even in advanced cases of dementia dramatic memory recovery occurred if high enough levels of nucleic acids were given.

### **3L. Longevity**

It is perhaps functional nucleic acid deficiency that limits our potential for healthy longevity more than any other single factor. Of all the interventions that have ever been attempted to increase the life span of mammals, no method ever studied has been more powerful for mammalian life extension than nucleic acid supplementation. Compared to other techniques that have increased longevity of experimental animals up to 50%, administering nucleic acids has doubled and even tripled the usual maximum life span.

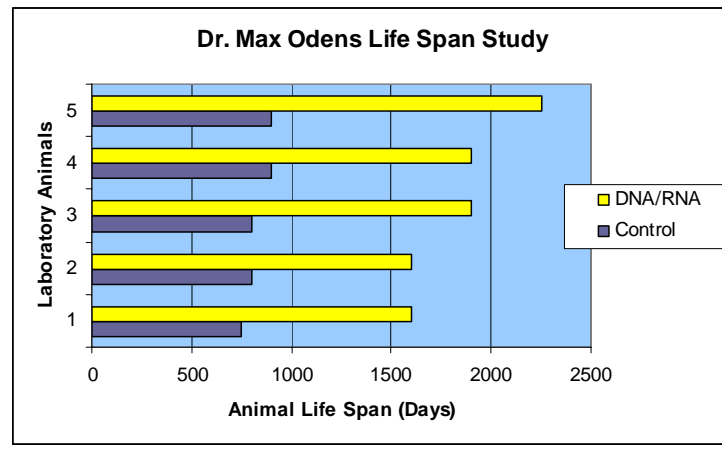
In a landmark study, a strain of rats was used that had a usual life span of 800-900 days. The study began with all of the animals at day 750, rather advanced in age at the entry of the test protocol. Half of the animals were used as controls and received their standard diet, housing, and care. The treatment group animals were given identical conditions with the exception of receiving weekly injections of DNA and RNA.

After eight weeks the control rats looked much worse than at the start of the study, losing fur and muscle mass, and showing reduced physical activity. In sharp contrast, at this time in the study, the treated animals actually looked

and behaved like younger animals. They regrew fur and increased their muscle mass, had renewed libido, and were significantly more active.

By day 150 of the study, all of the untreated control animals had died. In dramatic contrast, the minimum additional life span in the treated animals was 850 days, minimally doubling the usual life span of the animals. Perhaps most noteworthy, the longest lived animal in the treatment group survived 1500 days from the start of the study.

This is the greatest life extension ever reported for a mammal; nearly triple the usual maximum life span. It is especially remarkable because the animals were of advanced age at the start of the study. Weekly injections of DNA effectively increased the remaining life spans of the animals by 500-900%.



It is as yet unknown whether even greater degrees of life extension could be achieved by beginning nucleic acid supplementation at an even earlier age, before any organ deterioration had occurred. It is likely that the longevity achieved would be at least as great or greater.

It is important to note that the doubling and tripling of the animal's life span resulted from an ongoing program of nucleic acid delivery. This suggests that optimum longevity effects from DNA and RNA component supplementation requires continuous delivery of nucleic acid bases; this assures that the major glands and tissues of the body always have the elements needed for peak rejuvenation and repair.

CELLFOOD DNA/RNA provides the most concentrated, efficient, and cost effective delivery of nucleic acids ever

developed. For cell rejuvenation, enhanced immunity, and numerous tissue benefits, the oral spray of this formula provides readily absorbed pure individual nucleic acid bases. The magnitude of this delivery is indicated by the quantity of DNA nucleic acid base elements given in a single one-month supply of CELLFOOD DNA/RNA - nearly double the amount of all the nuclear DNA in all the cells of the body.

#### **4. Synergistic Effects of CELLFOOD**

The powerful tissue effects of CELLFOOD DNA/RNA are further amplified by the extraordinary properties of its CELLFOOD base. Produced by Nu Science Corporation, this breakthrough formula has been studied and winning awards for over forty years, with thousands of glowing testimonials received from around the globe.

CELLFOOD has been shown to increase the absorption of nutrients very significantly. In the vital first 30 seconds after the initial spraying of CELLFOOD DNA/RNA, this accelerated absorption assists with rapid bloodstream entry of nucleic acids to receive maximum biological benefits from these powerful nutrients. Many persons have described increased physical energy and mental clarity within a few minutes of using CELLFOOD DNA/RNA.

The proprietary dibase-dipole technology in CELLFOOD creates an optimal environment to favor the absorption and utilization of the over 70 trace elements in CELLFOOD. Highly bioavailable and bioactive trace elements are essential to support the numerous enzyme systems in the body that require trace element micronutrients to function. Trace element delivery to support the full range of metabolic enzyme activities in the body may well improve the results of nucleic acid supplementation beyond those achieved in previous studies of the effects of nucleic acids alone.

CELLFOOD increases tissue oxygenation, increasing the potential for energy generation in every cell. The greater energy potential of cells supports the ability to fully use nucleic acids of CELLFOOD DNA/RNA to repair and turn back the aging clock of cells.

The extraordinary action of CELLFOOD to generate nascent hydrogen is one of the most potent antioxidant mechanisms

that can be delivered to tissues. The tiny size of nascent hydrogen atoms allows them to freely and rapidly diffuse through cells and tissues, protecting DNA, enzymes, and cell membranes throughout the body. The new DNA, RNA, and proteins thus generated by CELLFOOD DNA/RNA will receive high-level antioxidant protection to preserve the rejuvenative benefits of nucleic acid supplementation.

The 34 enzymes supplied in CELLFOOD help fill in metabolic gaps to get optimum utilization of nucleic acids and other nutrients. Through improved general digestion, the basic precursors the cells need for energy metabolism and building blocks for complex molecules can be delivered in abundance.

The amino acids in CELLFOOD provide some of the most basic nutrient needs in the body to build enzymes and proteins from scratch. Combining amino acids with nucleic acids and trace elements powerfully fuels the cellular engines with the complete spectrum of basic and essential elements for high performance cells.

CELLFOOD alone has been found in animal studies to strengthen the lymphoid immune system. Providing nucleic acids in addition to CELLFOOD is highly likely to further augment this highly desirable response. CELLFOOD DNA/RNA overcomes limitations of immune recovery due to stress induced cellular nucleic acid deficiency.

The addition of nucleic acids to CELLFOOD is thus a potent life enhancing combination that helps cells in almost any condition achieve a higher level of function.

## **5. Laser Enhancement Technology**

CELLFOOD DNA/RNA adds yet another revolutionary technology to make it a product of unmatched potency - a laser process for nutrient enhancement that has been patented worldwide. This technology has been developed over the last eight years by the research team of Dr. Todd Ovokaitys, a Johns Hopkins and Georgetown University trained medical doctor, internist, and pulmonary and intensive care specialist.

As a byproduct of research into the development of novel laser technologies for treating major diseases, a new form of laser energy was created. This new form of laser energy is so powerful it can be used to reshape molecules into a form that the body can use more efficiently, thus delivering greater bioavailability.

In essence, a typically manufactured nutritional supplement is subjected to chemical extraction, purification, and drying steps. All of these processes can cause numerous random distortions of nutrient shape. Enzymes of the body are highly shape sensitive for the molecules they will accept or reject. When the body receives a nutrient in a wide range of random shapes, some will fit and many others will not. The nutrients that don't fit will either be excreted or broken down to relatively useless compounds.

The breakthrough embodied in the laser reshaping technology is the ability to produce ultrashort pulses in resonance with the natural frequency of the nutrients. The natural frequency of any structure is the frequency it will naturally tend to vibrate at when stimulated. If impulses are provided at the natural frequency even tiny amounts of energy given in each cycle build up to very large amounts of energy in the structure.

The basic analogy is kicking your legs to propel a swing. If you kick your legs at just the right time in the swing, the swing will go higher and higher. If you kick your legs randomly the swing will jiggle around at its lowest point, gathering no momentum. Normal laser action is like kicking your legs continuously. The impulses are out of phase with the natural frequency and the swing is not moved other than random small movements. In contrast, the laser impulses generated through Dr. Ovokaitys' technology provides impulses at the right phase of the molecular vibration to build the energy in the molecule, to up to several times the baseline energy in the molecule.

The net effect of resonant laser stimulation is to create small flat stretched molecules that most importantly are consistent in shape from molecule to molecule. Homogenizing the shape of the molecules greatly reduces the enzyme energy needed to bind the next molecule, which can greatly increase the efficiency of nutrient utilization. This allows the cells to make much more of the desired products from the same quantity of ingested nutrients.

Using this laser molecular resonance technology, crystals of important nutrients have been made that show the predicted effects. Crystals prepared without the laser show numerous defects in crystal formation, indicating the diversity of shapes. In contrast, laser treated crystals are perfectly formed and free of defects, attesting to consistency of form.

Using X-ray crystallography, the predicted effects of flattening and stretching molecular bonds has been observed. X-ray crystallography is the scientific gold standard for determining the explicit three-dimensional shape of molecules and can place the location of each atom in the molecule to tiny fractions of Angstroms (1 Angstrom = one ten billionth of a meter). X-ray crystallography has also shown tremendous homogenization of molecular shape in an important nutrient known to have a wide variety of shapes after the usual manufacturing processes.

At the level of the test tube, cells fed equal amounts of ordinary versus laser treated nutrients have been tested. Milligram for milligram, cells fed the laser treated nutrients have produced statistically significantly more of the biologically desirable internal products.

Several amino acid effects in particular have been shown to be enhanced in vitro or clinically through laser treatment. Laser treatment of nutrients can thus work synergistically with the numerous CELLFOOD effects to create the most potently absorbed and utilized nutrition ever offered.

The laser technology used to enhance CELLFOOD DNA/RNA is the most powerful method of reshaping and homogenizing nutrients for absorption and assimilation ever developed. The combination of CELLFOOD and laser technologies is an unequalled combination for boosting amino acid and nucleic acid metabolism.

For it is not the nutrients you ingest that improve your condition, it is only the nutrients that you assimilate and use that can transform your health and save your life.

## **6. DNA/RNA Precursor Support**

In addition to the pure individual bases of DNA and RNA, CELLFOOD DNA/RNA contains the amino acids the body uses to make nucleic acids from scratch. Providing these amino acids - glutamine, serine, glycine, and aspartic acid - further boosts the capacity of cellular metabolism to maintain its nucleic acid pools at optimum levels for cell rejuvenation and repair.

CELLFOOD DNA/RNA also contains the amino acids proline and lysine. Recent scientific research has shown that these amino acids can prevent the growth of tumors in the body.

All of these amino acids have been laser treated to enhance their biologic activity. CELLFOOD DNA/RNA thus supports nucleic acid chemistry and immune function by providing nutrient factors from without and supporting internal production of essential components from within the cells.

## **7. Longevity Enhancing Cofactors**

To make CELLFOOD DNA/RNA an ultimate anti-aging formula, it also provides clinically tested nutrients that can reverse the aging clock at the DNA level. These nutrients have also been shown to protect and repair DNA and prevent DNA mutations, thus reducing the risk of cancer and preserving cells at a more youthful level.

Perhaps the primary mechanism of aging in the cells is the loss of DNA markers called methyl groups (a simple group with one carbon and three hydrogen atoms, known as CH<sub>3</sub>). At birth, DNA in the cell nucleus has a significant fraction of its cytosine residues tagged with methyl groups. Depending on the cell type, the level of cytosine methylation ranges from 2-6%.

Aging is regulated and programmed by the gradual loss of methyl groups from nuclear DNA. When 40% of the methyl groups are lost, degenerative death typically occurs.

All of the factors known to cause aging accelerate the loss of methyl groups from DNA. For example, smoking, poor nutrition, poor vitamin intake, low exercise, environmental toxin absorption, and radiation exposure all accelerate methyl group loss.

Any intervention that slows, stops, and reverses the loss of methyl groups from DNA is slowing, stopping, and even reversing aging at the DNA level. CELLFOOD DNA/RNA provides the most powerful laser enhanced nutrient factors for improving DNA methylation ever studied.

The most sensitive blood chemistry test for determining the rate of methyl group loss from DNA is called homocysteine. The higher the homocysteine level above 4-6, the greater the rate of methyl group loss from DNA. The teenage level of homocysteine is 4-6, which tends to rise 1-2 points per decade, such that at 60-70, the level is typically 12-15 or higher. Elevated homocysteine has in parallel with aging effects also been found to be a cardiac risk factor. Above a level of 6.3, cardiac risk rises exponentially, with a level of 15 carrying a risk four times, and a level of 20

carrying a risk that is nine times greater for a major cardiovascular incident than that of the general population.

In a major double blind randomized placebo controlled clinical study the effects of laser-enhanced nutrients on homocysteine reduction and other important metabolic factors and clinical symptoms. This study was reviewed and approved by the Western Institutional Review Board as meeting the international standards for the design and safety of human clinical research.

Perhaps the single most powerful homocysteine-lowering nutrient is trimethylglycine, or TMG. This molecule has three methyl groups to donate, hence the prefix trimethyl. It is also known as betaine because it is a natural substance derived from sugar beets.

Previous research has shown that high dose betaine can reduce the risk of mortality the first year after a heart attack from 25% to 0%. In addition, high dose betaine in conjunction with vitamin cofactors has been the only intervention that has permitted women with a genetic disease of high homocysteine levels (homocystinuria) to conceive and have normal gestations and deliveries. In other persons with homocystinuria, adding betaine has reversed neurologic defects and caused gray hair to darken and lost hair to regrow.

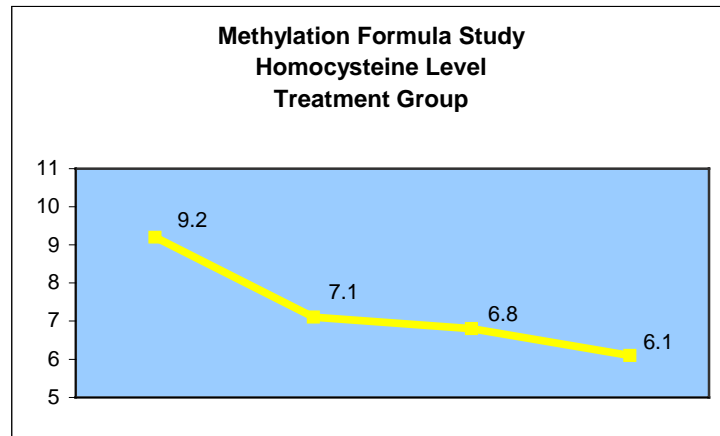
Laser treatment of a betaine compound has shown dramatic molecular effects that favor greater biological activity. Crystals grown using Dr. Ovokaitys' system show a very high level of homogeneity compared to the irregularities and numerous defects seen in control crystals grown without the laser. Homogeneity reduces the energy required by enzymes to make the desired products.

X-ray crystallography, the gold standard for determining explicit molecular shape since 1915, also showed striking findings. The laser treated betaine compound had a uniform flattened and stretched shape not matched by the control untreated molecules. The flat stretched shape has higher electric and magnetic field moments that also promote more efficient enzymatic action.

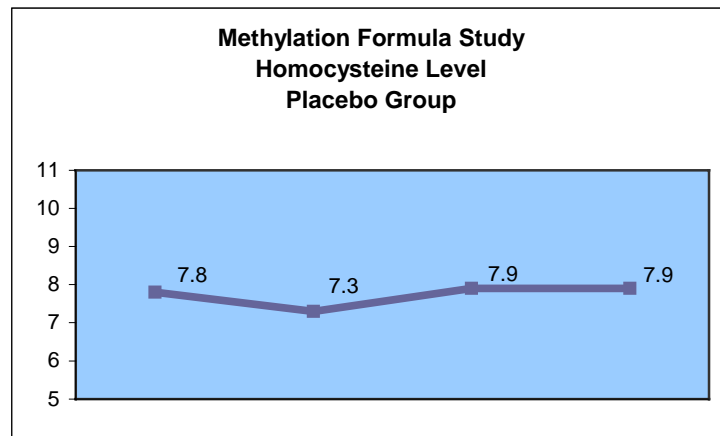
The study formula for boosting methyl group transfers and reducing homocysteine contained laser treated betaine as the main component. In addition laser treated vitamin cofactors that are known to support these pathways were also included, particularly vitamins B6, B12, and folic

acid. Niacin was also included to assist with fat metabolism in addition to homocysteine reduction, for further cardiovascular support.

The treatment group received increasing doses of the laser enhanced methylation formula over a 3-month period of time, whereas the placebo group only received sugar pills. Subjects had blood drawn at baseline and every month for homocysteine levels, blood counts, and other metabolic tests. Subjects completed daily written reports and each week completed an extensive standardized symptom survey.



By the completion of the study, the treatment group showed very dramatic metabolic improvements not seen in the placebo group. Homocysteine levels for the treatment group started at values that on average carry about double the cardiac risk that by the end of the study reduced to values at less than the risk of the general population. The reduction at every dosage level was highly statistically significant, the homocysteine reduction for the group suggestive of a 20-30 year physiologic reduction in this aging measure.



The placebo control group showed no significant change in homocysteine level. The study compellingly demonstrated that the laser enhanced methylation formula was the essential factor in significantly lowering homocysteine and thereby improving methyl group transfer chemistry.

In addition to reduced homocysteine, the treated subjects also showed highly statistically significant improvement of several clinical symptoms that included the following:

1. Reduced anxiety
2. Decreased body aches and pains
3. Elevation of mood
4. Decreased paranoia and obsessive-compulsive scales
5. Reduced hostility
6. Much decreased global symptom profile (all symptoms taken together in one comprehensive score)

Reducing homocysteine and improving methyl group transfers does more than protect and repair DNA and lower cardiac risks. Thousands of published scientific studies in the metabolic pathways related to the formula components also suggest the following potential benefits of these nutrients:

1. Cell membrane repair
2. Increased SAME and serotonin levels
3. Balance of neurotransmitter chemistry in the brain
4. Increased melatonin with immunologic, antiaging, and antioxidant effects
5. Regeneration and repair of insulating myelin sheaths of nerves
6. Rejuvenating degenerating proteins into functional proteins again
7. Required for full antioxidant potency of antioxidant proteins in every cell and tissue
8. Repair of joints and cartilage
9. Reduced risk of colon and other cancers
10. May help reverse precancerous lesions to normal cells
11. Improved histamine clearance
12. Supports detoxification pathways in the liver

CELLFOOD DNA/RNA is further boosted in function through the addition of the laser activated betaine and vitamin cofactors used in the clinical study. Not only does CELLFOOD DNA/RNA provide the nucleic acid bases needed for regeneration of cellular DNA, it also provides methyl group transfer factors to help slow, stop, and turn back the aging clock at the time of DNA regeneration.

These longevity-enhancing cofactors in CELLFOOD DNA/RNA support a vast range of cellular balance and repair from the DNA to the cell membrane to the spaces between the cells. With its complete spectrum of bioavailable nutrients, CELLFOOD DNA/RNA is one of the most powerful health and longevity formulations ever developed.

## **8. Added ATP Benefits**

ATP stands for adenosine triphosphate, perhaps the most important of all the nucleic acid derivatives in the body. Its effects are so powerful and essential to cellular function, a description of its unique properties warrants special attention. CELLFOOD DNA/RNA has an especially rich supply of ATP in a highly bioavailable form.

ATP is the fundamental currency of every cell in the body. Virtually every activity in the body that requires energy uses ATP as the source of power. Whether the function is building complex molecules from building blocks, maintaining the electric potential of cell membranes, or allowing muscle fibers to contract for mobility, speed, and strength, it is ATP that provides the electrochemical fuel.

### **8A. Cellular Energy**

There are two fundamental ways ATP is generated in the body, one very efficient and one very wasteful. Efficient ATP production occurs through aerobic metabolism in the mitochondria, tiny organs or organelles within the cell that burn fuels like fat and glucose to generate ATP. Aerobic means that oxygen is used to completely "burn" a fuel for maximum ATP production. For example, the complete combustion of a single glucose molecule to carbon dioxide and water yields a rich harvest of 36 molecules of ATP. As CELLFOOD boosts cellular oxygen delivery, already making ATP production more efficient, the ATP in CELLFOOD DNA/RNA has an ideal environment for further boosting cellular energy conditions; thus all the desirable ATP effects are likely to be even more potent.

Inefficient ATP production occurs through anaerobic metabolism. Anaerobic means without oxygen, so very little energy and ATP are extracted from fuels. When glucose is broken down through anaerobic metabolism, each molecule of glucose only gives rise to 2 molecules of ATP, wasting 95% of the potential glucose energy. Further, the byproduct of this reaction is two molecules of lactic acid, which makes

the cells more acidic and less functional. In athletes, lactic acid accumulation causes muscle fatigue and the "burn", whereas in cancer cells lactic acidosis is a long recognized metabolic disturbance that can promote a dwindling spiral of progressive malignancy.

The direct suppression of tumor cell lines by ATP is likely related to increased cellular energy efficiency. The oxygenating effects of CELLFOOD combined with the rich supply of ATP in CELLFOOD DNA/RNA is likely to be additive and even synergistic at helping cells throughout the body achieve higher energy potentials and more ideal energy balances.

### **8B. Neurologic Effects**

ATP is the primary fuel that drives learning, memory, and concentration functions. ATP is essential to maintain the membrane potentials that permit nerves to integrate and transmit signals throughout the central and peripheral nervous system.

In addition, giving ATP or its breakdown product adenosine intravenously has shown pain relief comparable to injected morphine for pain due to ischemia (impaired blood flow). Two surgical studies have shown a 25% reduction in the need for postoperative narcotic pain relievers when adenosine was given IV.

Perhaps most remarkable, peripheral neuropathic pain is one of the most difficult pain syndromes to manage. Excruciating constant pain may resist all but the most drastic measures. IV adenosine for 45-60 minutes reduced neuropathic pain for 6 hours to 4 days in 86% of persons tested.

### **8C. Cardiac Strengthening**

The cyclic contraction of cardiac muscle is highly ATP intensive and thrives on aerobic metabolism. The combined oxygenation and ATP delivery effects of CELLFOOD DNA/RNA provide the heart with an enhanced energy supply for efficient function.

Providing intravenous ATP has been shown to slow conduction through the AV node, which has been used to slow down certain excessively fast heart rates called tachycardias. Occasionally chest symptoms can occur with rapid

intravenous infusions of ATP that resolve within seconds after stopping the infusion. ATP is not known to cause excessively slow heart rates in persons whose heart rates are normal.

#### **8D. Muscle Performance**

Skeletal Muscle also requires abundant quantities of ATP for muscular contraction. Supplemental ATP has been described as an "explosive performance enhancer." Especially if given with two other nutrient supporters of muscle function, creatine monohydrate and creatine pyruvate, muscle endurance, performance, and recovery can be significantly boosted.

#### **8E. Lung Function**

ATP administration has been shown to have numerous beneficial effects on lung function, particularly the delicate lining membranes of the airways and alveoli. In the lung, branching tubes called bronchi and then bronchioles deliver air to and from the tiny air sacs called alveoli. The alveoli form a large membrane only a single cell in thickness through which capillary blood can pick up a new supply of oxygen and unload carbon dioxide with every breath.

In vitro, or test tube level research, has shown that ATP increases secretion of surfactant in the alveoli. Surfactant is an essential substance that keeps the alveoli from collapsing when the breath is exhaled, preserving integrity of functional gas exchange.

The bronchial tubes are lined with tiny brush like structures called cilia that are constantly sweeping particulates that get into the lung upward and outward. ATP not only increases the ciliary beat frequency, it also increases the secretion of mucus and water from the bronchial lining, to help keep the lungs clear at all times.

In some conditions, the blood pressure in the vessels in the lungs can rise too high, a condition known as pulmonary hypertension. When given intravenously, ATP binds to the lining of the pulmonary vessels and stimulates a cascade of events that cause the blood vessels to relax and lower the pressure.

Cystic fibrosis is one of the most common inherited genetic diseases. Impaired water and electrolyte secretion from the bronchial lining results in thick secretions that block the bronchial tubes and result in recurring infections. ATP has been found to increase electrolyte and water secretion with improved clearance of secretions, offering hope of a new and useful intervention in this often aggressively progressive condition.

#### **8F. Cellular Immune Enhancement**

Natural killer cells and cytotoxic T cells as reviewed are subtypes of effector lymphocytes that have a vital role in immune defense against tumors and virus-infected cells. Recent research suggests that ATP may play an important role in the mechanism through which these effector cells eliminate the target abnormal cells. In test tube studies, ATP has been shown to enhance the ability of cytotoxic lymphocytes to rupture the membranes of tumor cells.

#### **8G. Antitumor Effects**

In test tube studies, adding ATP has shown the ability to inhibit the growth of several types of human cancer cell lines. The types of cancer cells inhibited include pancreatic cancer, colon cancer, melanoma, androgen-independent prostate cancer (i.e., not responsive to male hormone manipulation, the most aggressive variant), breast cancer, myeloid and monocytic leukemia (bone marrow derived tumors of blood forming cells), and multidrug resistant colon cancer. In contrast, normal cells from these tissues showed less inhibition of growth or no inhibition at all, suggesting that increasing ATP outside cells may have a selective inhibitory effect on several cancer cell lines.

Mice injected with the untreated leukemia cell line L1210 died of leukemia within 18 days. In contrast, if the leukemic cells were treated with ATP before injection, 85% of the recipient mice survived for more than 70 days, a highly significant increase in survival.

In mice and rats, injections of ATP into the abdominal cavity have significantly slowed the growth of several different types of tumor cell lines, including colon cancer, lymphomas, and breast cancer. ATP administration resulted in significantly prolonged survival in the treated animals.

Administering ATP may also enhance the effectiveness of cancer chemotherapeutic agents, increasing the antitumor effect of a given dose, or greatly reducing the dose required for a therapeutic effect. In particular, decreasing the dose of the treatment agents can dramatically reduce the toxicity of these antitumor drugs.

For example adding ATP to the drug doxorubicin to cultures of human ovarian cancer cells doubled the tumor cells eliminated compared to using doxorubicin alone. When ATP was given, 30-50% more doxorubicin accumulated in the cancer cells, whereas giving ATP to healthy human cells did not increase the accumulation of the drug.

In mouse melanoma cell lines, ATP increased the entry of several chemotherapeutic agents. The antitumor effects of these agents were additively increased with ATP treatment. Even more remarkable was the synergistic antitumor effect seen with the drug vincristine; the effective therapeutic dose of this agent was reduced to one-tenth to one-fiftieth of the dose usually required.

In mice with melanoma addition of the ATP derivative adenosine to the treatment program significantly increased the tumor elimination. In addition, a protective effect was seen on the healthy bone marrow, preventing the usual decrease in white blood cells due to treatment.

Beyond growth inhibition, ATP may cause some types of tumor cells to burst. In human acute myeloid leukemia, a dose-dependent rupture of the cancer cells was seen using ATP.

In a randomized human clinical study, intravenous ATP was given to patients with advanced lung cancer at 2-4 week intervals. Whereas the control patients lost 2 pounds per month, the treated patients had stable to slightly increased weight. Over the six months of the study, the control patients lost one third of their muscular strength, while the ATP treated patients lost no strength. Although some medications may maintain weight in cancer patients, this is usually due to fat gain while muscle is lost. Intravenous ATP is the first intervention ever studied that appears to be able to maintain muscle mass, body weight, and muscle function in advanced cancer patients.

Thus ATP may be broadly beneficial in supporting antitumor cell biology. ATP enhances cellular immune function, inhibits the growth of several types of tumors, and in some cases may be able to cause direct elimination of tumor cells. In addition, ATP protects from radiation injury and

may preserve weight and muscle strength. Further study will be needed to assess the full range of benefits it may provide. Given its high safety profile, ATP use may be one of the most beneficial adjuncts developed for supportive care, enhancing the results of conventional treatments.

#### **8H. Improved Human Survival of Shock**

Under conditions of metabolic stress, such as depriving a tissue of oxygen through reduced blood supply, a rapid and massive depletion of ATP within cells occurs. Giving ATP or its metabolite adenosine has been described as a "natural defense system" to protect the tissues from the effects of severe oxygen deprivation. These protective effects include improved function of energy generating mitochondria, better electrolyte transport, increased ATP within cells, reduced oxygen consumption, and improved function of messenger molecules within the cells.

Shock is a condition in which there is a generalized reduction of blood flow and oxygenation to tissues below that required for their function. If shock is sustained, organ failure or death may occur. Once shock is reversed, supportive measures to assist tissue recovery can significantly affect quality of outcome.

In a study of 32 patients with acute kidney failure or multiple organ failure due to shock, highly beneficial effects of intravenous ATP were observed. The patients were randomly divided into the treatment group that received intravenous ATP or the control group that did not. The survival rate of 73% in the control group was increased to 100% survival in the ATP treatment group, showing the powerful tissue restorative effect of this intervention.

#### **8I. Sexual Function**

In human tissue studies, the administration of ATP and adenosine has been found to induce the smooth muscle relaxation that is essential for erectile function. In diabetic men, erectile dysfunction is common through several mechanisms. The erectile tissue of diabetic men has been found to be especially sensitive to the smooth muscle relaxation effects of ATP, offering them a hopeful avenue of recovery of erectile function.

Containing both ATP and adenosine, CELLFOOD DNA/RNA provides these elements known to support optimum sexual function. Whether it is delivering the nutrients to repair and preserve the health of tissues, or boosting energy and performance, CELLFOOD DNA/RNA is designed to enhance quality of life across the board.

## **9. Safety**

CELLFOOD DNA/RNA has an outstanding safety profile. The levels of nucleic acid elements provided falls within the internationally approved safety guidelines for supplementing nucleic acids in infant formulas, if used as recommended on the product label. As these guidelines are on a per kilogram basis, the suggested adult usage is 6 sprays by mouth per day.

The one precaution is that the purine nucleic acids adenine and guanine are metabolized to uric acid in the body. Persons with elevated uric acid or a history of gout may have a very slightly increased risk of an episode of gout while taking nucleic acid supplements. Because of the very high potency and bioavailability of the nucleic acid elements in CELLFOOD DNA/RNA, the specific quantities of purine bases are well below that usually associated with an increased risk of elevating uric acid.

CELLFOOD has been used worldwide for decades with a superb safety profile, even for use in children. The amino acid and vitamin cofactors added are also known to be extremely safe. The methyl group transfer factors are not only extremely safe; they are highly beneficial for persons of all ages.

Some persons find that they are highly energized with CELLFOOD DNA/RNA and may have difficulty falling asleep if they take it too late in the day. For such persons it is best to use the formula earlier in the day to enjoy the energy effects without interference with sleep.

For any person with medical issues, it is always advised that their physician be consulted before beginning any new nutritional program.

## **10. Summary and Conclusion**

CELLFOOD DNA/RNA is a landmark new formula that combines the benefits of CELLFOOD with powerful proprietary laser

technology. Delivering highly bioactive nucleic acid elements with synergistic cofactors, this formula can help rebuild and boost the function of every cell in the body.

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