

The Story of Ozone

by Dr. Saul Pressman, DCh, LTOH

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Chiropractic is a form of healing that aids a person to discover that: wellness is dependent on the unification of body, mind and spirit; each person is responsible for achieving and maintaining his own optimal wellness; such wellness is dependent on following natural means and therapies; and preventing disease is well within the ability of each person.

Chiropractic points the way toward total wellness by offering sound advice and educational opportunities so that each person can make intelligent, informed decisions about the various factors influencing his total wellness. This state of wellness is a natural state of being, regardless of the age of the person.

KNOW YOUR RIGHTS

Canada and the United States are signatories to the World Health Organization's Declaration of Helsinki, which states:

"In the treatment of the sick person, the physician must be free to use a new diagnostic or therapeutic measure, if in his or her judgment it offers hope of saving life, re-establishing health or alleviating suffering."

Any college or board of physicians or equivalent medical licensing board that investigates or harasses a physician for using ozone therapy is in violation of the Helsinki Declaration.

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THE HISTORY OF MEDICAL OZONE

Ozone was first discovered and named by German scientist C.F. Schonbein in 1840.

The first ozone generators were developed by Werner von Siemens in Germany in 1857. The first report of ozone being used to purify blood in test tubes was by the German Dr. C. Lender in 1870.

The first American therapeutic use of ozone was by Dr. John H. Kellogg in ozone steam saunas at his Battle Creek, Michigan sanitarium from 1880, as he wrote in his book, "Diphtheria: Its Nature, Causes, Prevention and Treatment". We have revived this powerful therapy 100 years later with our company, Plasmafire Intl.

In October 1893, the world's first water treatment plant using ozone was installed in Ousbaden, Holland, and today there are over 3000 municipalities around the world that use ozone to clean their water and sewage, including all the great cities.

In 1885, the Florida Medical Association published "Ozone" by Dr. Charles J. Kenworthy, MD, detailing the use of ozone for therapeutic purposes.

In September 1896, the electrical genius Nikola Tesla patented his first ozone generator, and in 1900 he formed the Tesla Ozone Co. Tesla sold ozone machines and ozonated olive oil to doctors for medical use. (100 years later we are doing the same things with our company, Plasmafire Intl, with the adaptation and perfection of another unpatented electrostatic Tesla design built up until the 1920s. We have seen several of these 80 year old generators and they still work perfectly. With this in mind, we offer the world's only Lifetime Warranty on an ozone generator).

In 1898, the Institute for Oxygen Therapy Healing was started in Berlin by Thauerkauf and Luth. They

experimented with injecting ozone. Ozone was bonded to magnesium in a catalytic process to produce Homozon by Dr. Eugene Blass in 1898. Beginning in 1898, Dr. Benedict Lust, a German doctor practicing in New York, established the practice of Naturopathy, based on ozone therapy.

Also in 1898, homeopathic Dr. S.R. Beckwith, of New York, published his booklet describing the use of his invention, the Thermo-Ozone Generator, in the treatment of a wide variety of diseases.

In 1902, J.H. Clarke's "A Dictionary of Practical Materia Medica", London, describes the successful use of ozonated water ("Oxygenium") in treating anemia, cancer, diabetes, influenza, morphine poisoning, canker sores, strychnine poisoning and whooping cough.

In 1902, Dr. Charles Linder, MD, of Spokane, Washington was written up in an article in a local paper that stated that he injected ozone as part of his standard medical practice.

In 1904, "The Medical Uses of Hydrozone (ozonated water) and Glycozone (ozonated olive oil)" by Charles Marchand, a New York chemist appeared in its 19th edition. The book is in the Library of Congress with the US Surgeon General's stamp of approval on it.

This active use of therapeutic ozone predates the establishment of the FDA in 1906 and therefore qualifies ozone therapy to be grandfathered into acceptance.

In 1911, "A Working Manual of High Frequency Currents" was published by Dr. Noble Eberhart, MD, the head of the Dept. of Physiologic Therapeutics at Loyola University, Chicago. In Chapter 9, he details the use of ozone to treat tuberculosis, anemia, chlorosis, tinnitus, whooping cough, asthma, bronchitis, hay fever, insomnia, pneumonia, diabetes, gout and syphilis.

In 1912, Dr. H.C. Bennett published "Electro-Therapeutic Guide". He described the use of Ozol, ozone breathed after running through eucalyptus, pine or thyme oils.

In 1913, the Eastern Association for Oxygen Therapy was formed by Dr. Eugene Blass and some German associates.

During World War I, (1914-1918) ozone was used to treat wounds, trench foot, gangrene and the effects of poison gas.

Dr. Albert Wolff of Berlin also used ozone for colon cancer, cervical cancer and decubitus ulcers in 1915.

In 1920, Dr. Charles Neiswanger, MD, President of the Chicago Hospital College of Medicine published "Electro Therapeutical Practice". Chapter 32 was entitled "Ozone as a Therapeutic Agent".

In the 1920s, Nikola Tesla allowed licensed production of an ozone air purifier in Canada, based on his cold plasma design.

In 1926, Dr. Otto Warburg of the Kaiser Institute in Berlin announced that he had found that the cause of cancer is a lack of oxygen at the cellular level. For his discovery, he was awarded the Nobel Prize for Medicine in 1931 and again in 1944, the only person ever to receive two Nobel Prizes for medicine. He was also nominated for a third.

In 1929, a book called "Ozone and Its Therapeutic Action" was published in the US listing 114 diseases and how to treat them with ozone. Its 40 authors were the heads of all the leading American hospitals.

In 1930, the Swiss dentist Dr. E. A. Fisch was using ozone in dentistry, and wrote many papers on it. He also introduced it to the Austrian surgeon Dr. Erwin Payr in 1932.

[In 1933, the American Medical Association, headed up by Morris Fishbein, set out to eliminate all medical treatments that were competitive to drug therapy. The suppression of ozone therapy in the US began then, and continues to this day, except in ten US states, where doctors are protected by state laws. At the behest of the AMA, the FDA began seizing generators in the 1940s.]

In 1935, M. Sourdeau published a paper on "Ozone in Therapy" in France.

Dr. Aubourg and Dr. Lacoste were French physicians using ozone insufflation 1934-1938. Aubourg wrote "Medical Ozone: Production, Dosage and Methods of Clinical Application" in 1938. He gave ozone rectally, vaginally, injected into wounds and by breathing. In 8000 applications, there were no harmful side effects.

Dr. Hans Wolff wrote the book "Medical Ozone" in the 1940s.

In 1942, "Gordon Detoxification and Hydro Surgery: Theory and Practice" was published covering the medical uses of ozone as colon cleanser.

During World War II, Dr. Robert Mayer learned of ozone therapy from German prisoners of war at Ellis Island, and used ozone in his practice for the next 45 years.

In 1944, Dr. Otto Warburg earned his second Nobel Prize in Medicine for his discovery of the basic cause of cancer in damaged cell respiration.

In 1948, Dr. William Turska of Oregon began using an ozone machine of his own design (Aethozone). In 1951, Dr. Turska wrote the article "Oxidation", still appropriate today.

In 1952, the National Cancer Institute verified Dr. Otto Warburg's findings regarding lack of oxygen being the cause of cancer.

From 1953, German Dr. Hans Wolff began training many doctors in ozone therapy.

In 1954, Frank Totney published "Oxygen : Master of Cancer".

In 1956, Dr. Otto Warburg published "On the Origin of Cancer Cells" in Science, 24 February 1956, Vol. 123, Num. 3191.

In 1957, Dr. J. Hansler patented an ozone generator which has formed the basis of the expansion in German ozone therapy over the last 40 years. Today, over 8000 German doctors use ozone therapy daily.

In 1961, the Encyclopedia of Chemical Technology stated: "During the 80 year history of the large scale usage of ozone, there has never been a human death attributed to it".

In 1961, Dr. Hans Wolff introduced the techniques of major and minor autohemotherapy.

In 1966, Dr. Otto Warburg, now director of the Max Planck Institute for Cell Physiology, delivered a lecture on "The Prime Cause and Prevention of Cancer" to a meeting of Nobel laureates at Lake Constance, Germany.

In 1971, Dr. Hans Wolff and Prof. Dr. Siegfried Rilling founded The German Medical Society for Ozone Therapy.

In 1972, The International Association for Oxygen Therapy was founded by Dr. George Freibott as the successor to the Eastern Association for Oxygen Therapy of 1913.

In 1977, Dr. Renate Viebahn provided an overview of ozone's biological action.

In 1979, Dr. George Freibott successfully treated a Haitian AIDS patient suffering Kaposi's sarcoma with ozone.

In 1980, Dr. Horst Kief also reported success with ozone therapy for AIDS patients.

In 1980, F. Sweet, et al, publish "Ozone Selectively Inhibits Human Cancer Cell Growth" in the peer-reviewed journal, Science, Vol. 209.

In 1982, the German medical textbook "Medical Ozone" is published by Dr. E. Fischer Medical Publications in Heidelberg.

In 1983, the first International Ozone Association medical ozone conference was held, in Washington, D.C., USA. The abstracts were published in the book "Medical Applications of Ozone", compiled and edited by Julius Laraus.

In 1985, Dr. Renate Viebahn published "The Biochemical Process Underlying Ozone Therapy". Dr. Siegfried Rilling published "Basic Clinical Applications of Ozone Therapy".

In 1987, Dr. Siegfried Rilling and Dr. Renate Viebahn collaborated on the publication of "The Use of Ozone in Medicine", now the standard medical text on ozone application.

In 1990, the Cubans reported success in treating glaucoma, conjunctivitis and retinitis pigmentosa with ozone.

In 1992, the Russians reported the successful use of ozone in a brine bath to treat burns.

In June 1994, Plasmafire Intl sponsored an ozone symposium in Vancouver, with 160 attendees, and as a direct result, ozone therapy is recognized as an accepted modality by the Naturopathic Association of BC, with over 40 naturopaths treating patients with ozone therapy currently.

Today, after 125 years of usage, ozone therapy is recognized in Germany, Italy, France, Russia, Romania, Poland, Czech Republic, Hungary, Yugoslavia, Bulgaria, Israel, Japan, Singapore, Brazil, Cuba, Mexico, 4 Canadian provinces and 14 US states (Alaska, Washington, California, Colorado, Nevada, New Mexico, Texas, Oklahoma, Georgia, New York, North Carolina, Ohio, Minnesota).

TYPES OF OZONE GENERATORS

Nikola Tesla stated that oxygen is the only gas that will pick up and carry electrical energy. In doing so, it becomes tremendously active and seeks to combine with all other substances. The list of substances that are inert to ozone is very short, and includes glass, Teflon, Kynar, Viton, Lexan, and silicone. Therefore any ozone generator and auxiliary equipment must be composed of these substances only. There are several different techniques used to produce medical grade ozone, where freedom from contamination is critical.

One type of generator uses an ultraviolet lamp as its source. It produces a very small amount of ozone with a narrow frequency bandwidth of ultraviolet light. This method is suited to air purification, because in that bandwidth, UV only reacts with oxygen, but it is too weak for medical purposes. Also, the UV lamp degrades over time and eventually burns out.

The second method of ozone production is corona discharge, where a tube with a hot or cold cathode is surrounded by a metal anode. Sometimes it is called cold corona or silent discharge. The best ones are called dual dielectric, because they have a layer of glass separating each component from the gas stream. This prevents contamination of the ozone, but due to the current draw to the metal, they are prone to electrical arcing and burnout. This produces generators that have short lives. If any water enters the tube, it immediately burns out.

In addition, corona discharge generators make a lot of heat and must have large cooling fans to prevent them from overheating. You can always tell a corona discharge generator by the large cooling fan.

Lack of durability has always beset corona discharge ozone generators, and was a major reason for doctors mostly abandoning ozone therapy in the US during the Forties, in the face of increasing pressure from the FDA and the AMA. The manufacturers of these generators show that they know of their limitations by offering only three-year warranties.

Fortunately, there is a third method of producing clean, medical grade ozone. That method is called cold plasma. It uses glass rods filled with noble gases, excited by high voltage. The voltage jumps between the rods, forming an electrostatic plasma field which turns the oxygen into ozone. Since there is no appreciable current, there is no arcing or burnout. Thus the generator will last a very long time, limited only by the quality of the transformer. The original cold plasma generators were invented by Nikola Tesla in the 1920s and they still work 80 years later.

Many companies claim to have cold plasma generators, but examination always shows they use a metal anode, which makes them corona discharge, dependent on current, and prone to failure.

COLD PLASMA OZONE GENERATION

Nikola Tesla was the greatest inventor the world has ever seen. His fertile brain produced the original designs for all of the electrical apparatus now used to transmit AC power, for motors, generators, lighting, radio, radar, etc. The information about Tesla's genius has finally been spreading in the last two decades, after decades of suppression. Less well known is Tesla's involvement with ozone.

In 1896, Tesla was issued a patent for a corona discharge ozone generator using charged metal plates to act on ambient air. He formed the Tesla Ozone Co. in 1900 and went into production of these units. His customers were naturopaths and allopaths who welcomed this powerful therapy into their practices. Breathing of ozone bubbled through olive oil and other oils was widely practiced at this time, and the Sears catalog of 1904 offered a unit for this purpose using eucalyptus, pine and spearmint oils. Tesla produced a gel made by bubbling ozone through olive oil until it solidified, and sold it to doctors. One hundred years later, we are doing the same thing, with Nature's Gift ozonated olive oil.

After a while, Tesla began to get complaints from some doctors that his ozone generators were burnt out. Tesla was upset by this, so he put on his thinking cap to invent a method of generating ozone that would be immune to failure. He realized that it was current flow to a hot spot on the metal anode that caused the short and the subsequent burnout, and reasoned that the way to achieve long life was to eliminate the current by eliminating the metal. That left him with an electrostatic approach, which he was fully conversant with, featuring high voltage jumping a gap, with almost no current draw.

To carry the electrostatic charge, he used inert gases in glass rods. This produced a cold plasma field which energized oxygen into ozone, and resulted in a generator that proved impervious to burnout. The unit used ambient air, and produced a small amount of ozone as it was waved over a recumbent patient, who breathed it in. Tesla farmed out production of these generators to a Canadian company. There are still some of these units from the 1920s which have been kept in use and are still working as air purifiers today, 80 years later.

Tesla felt that this invention was of such importance to human health that he did not patent it; instead he donated it freely to all of mankind. Unfortunately, this meant that eventually the idea was lost, because there was no recorded patent to look up.

THE PLASMAFIRE GLASS TUBE

In 1993, my partner and I were shown a Tesla ozone generator from the 1920s, which operated on air. With that basic idea as a guide, we were able to perfect Tesla's design using pure oxygen as the source, producing the highest quality medical ozone generator available. Since then, over 3000 of these all-glass Plasmafire tubes have been sold, and none has ever failed. The advantage of this system is its inherent longevity and the absolute purity of the O₂/O₃ output stream. There are no metallics of any kind, therefore there is no possibility of contamination, or of the tubes shorting out. The tubes can run continuously without fan cooling, even when run 24 hours per day, which we do as we make ozonated olive oil gel (Nature's Gift). Many competitors claim to have all glass generators, but we are the only manufacturer of medical ozone generators with true cold plasma tubes. This technology tolerates an accidental entry of water into the tube without burning out. If this happens, simply run oxygen through the tube until it dries out.

The cold plasma technique has its own idiosyncrasies, one of which is its maximum concentration (about 70 ug/cc). It is interesting to note that the strongest response by the immune system (the production of interleukin-2 and gamma interferon) occurs with ozone concentrations of 30 - 55 ug/cc (The Use of Ozone in Medicine - Rilling and Viebahn, 1987). Tesla's instinct about cold plasma being the best method of ozone production for medical use has now been verified in modern times.

Another cold plasma trait is its slower buildup time and its sensitivity to flow rate. We take advantage of this sensitivity by using a precision click-stop regulator, which allows the home user to set a flow rate of 1/32 liters per minute (1/32 l/m) to attain the highest (safe) concentration. This is perfectly adapted to insufflation. Upon insertion and engaging the generator, a low concentration is being produced. As time passes, the concentration slowly increases, allowing the body to adjust and absorb the maximum amount of ozone. Within three minutes, the plasma field is fully established, with the generator producing at its maximum concentration, and the body is able to absorb the ozone at the rate it is entering. With this technique, people are doing rectal insufflations that last 15 - 20 minutes and vaginal insufflation for 15 - 45 minutes. In the ear, 5 - 15 minutes is sufficient.

Reliability and cleanliness have always been problems for ozone generator manufacturers. It is easy and cheap to make an ozone generator; however, building a generator that produces clean ozone and lasts a lifetime is not easy, and not cheap. We believe that with our products we have achieved this goal. We therefore confidently offer a Lifetime Warranty on our unique Plasmafire electrostatic cold plasma ozone generators.

OZONE CONCENTRATION

Medical ozone is produced in varying concentrations. The quantity of ozone in comparison with the quantity of oxygen in the gas stream is called per cent concentration. It is measured in micrograms (ug) of ozone per milliliter (ml or cc) of the mixture. A liter of oxygen weighs 1.4 grams. Therefore :

0.5	%	X	1.4	gm/l	=	7	ug/ml
1.0	%	X	1.4	gm/l	=	14	ug/ml
1.5	%	X	1.4	gm/l	=	21	ug/ml
2.0	%	X	1.4	gm/l	=	28	ug/ml
2.5	%	X	1.4	gm/l	=	35	ug/ml
3.0	%	X	1.4	gm/l	=	42	ug/ml
3.5	%	X	1.4	gm/l	=	49	ug/ml
4.0	%	X	1.4	gm/l	=	56	ug/ml
4.5	%	X	1.4	gm/l	=	63	ug/ml
5.0	%	X	1.4	gm/l	=	70	ug/ml

5 % or 70 ug/ml is considered to be the upper limit of concentration for internal use of medical ozone.

Dr. Greenberg, formerly of the Kief Clinic, has shown, in vitro, that at concentrations of 90 ug/ml there was crimping of red blood cells which was definitely harmful. Experiments by F. Sweet et al, have shown inhibition of growth in healthy cells at concentrations above 70 ug/ml. If we stay below that level, we will have no problems. Generators that produce higher concentrations can be dangerous for home use. Interestingly, cold plasma generators have a built in limitation of about 70 ug/ml, which is within the safe range. We are proud of the fact that no one has ever been harmed using our generators.

Medical ozone therapy has been found to be an extremely safe modality, free from the dangerous side effects associated with drugs. In a 1980 study done by the German Medical Society for Ozone Therapy, 644 therapists were polled regarding their 384,775 patients, with a total of 5,579,238 ozone treatments administered. There were only 40 cases of side effects noted out of this number, which represents the incredibly low rate of .000007 %, and only four fatalities. Ozone has thus proven to be the safest medical therapy ever devised.

Prof. B. Halliwell of the University of London has stated, after researching the topic, that there has never been a case cited in the medical literature of damage caused in vivo by the O1 oxygen radical.

OZONE AND MAGNETS

Doctors have reported that they can enhance ozone therapy by simultaneously using magnet therapy. Permanent magnets can be used with the north pole facing towards the body, on the underside of a table, or the back of a sauna. Magnets cause a polarization of red blood cells, due to their iron content. The polarization causes them to repel one another and move apart, making them more flexible and improving oxygen uptake in the lungs. Ozone also causes red blood cells to unclump and become more flexible, so that they can bend and get through the finest capillaries, improving microcirculation, reversing and preventing many diseases. There is a synergistic effect between ozone and magnets; they work better together.

OZONE FOR PREVENTION

The cells of the human body function by burning sugar in oxygen to provide energy. The waste products are carbon dioxide and water. If there is insufficient oxygen at the cellular level, the burn will be incomplete, and carbon monoxide and lactic acid will be formed. The body cannot easily rid itself of monoxide; it prevents the hemoglobin from picking up fresh oxygen at the lungs, and the body temperature is lowered. The lactic acid can build up in the system, clogging nerve signal pathways, eventually crystallizing and causing degeneration as the body's water gets dirtier.

What is needed is for more oxygen to come in and oxidize these toxins. If it is not available, they build up. The blood will carry a heavy load of sludge, and the lymph will become dirtier and dirtier. Eventually, toxins will be deposited in the fat and weight will increase. Free radicals will proliferate as toxins interfere with the normal neutralizing enzyme mechanisms for cleaning them up. Disease will result.

Hundreds of different diseases named by allopathy are but symptoms of this condition - toxic buildup - for which the underlying cause is hypoxia, or oxygen starvation at the cellular level. This is the cause of degenerative disease.

This is where ozone shines - in eliminating toxins from the body. Ozone is such a powerful therapeutic tool because it deals with the underlying cause through oxidation and oxygenation. Ozone taken on a regular basis in the home will, over time, safely clean all the fluids and tissues of the body, and furnish an oxygen-rich environment for all the cells of the body, providing high levels of immunity from most common diseases, and without any requirement for vaccinations with their load of toxins.

Ozone Therapy Protocols

There are twenty-four methods of administering ozone therapeutically: In the home or clinic

1. in the ear
2. vaginal insufflation
3. rectal insufflation
4. drinking water
5. cupping with a funnel
6. external limb bagging
7. bladder insufflation
8. ozonated bath
9. breathing through olive oil
10. steam cabinet
11. ozonated olive oil massage
12. ozonated water enema
13. direct intravenous injection
14. autohemotherapy

- 15.intra-arterial injection
- 16.direct injection into a tumor
- 17.intracutaneous (blistering)
- 18.subcutaneous
- 19.intramuscular
- 20.intra-articular
- 21.uterine insufflation
- 22.subatmospheric bagging
- 23.hyperbaric ozone
- 24.dental use of ozonated water

In the accessories kit, we supply the equipment necessary to do the first nine therapies. We manufacture quality steam saunas for the tenth. We produce ozonated olive oil (Nature's Gift) for the eleventh. And we can supply ozone resistant kangaroo bags to enable the twelfth.

THE IMPORTANCE OF CT VALUE

THE MEASURE OF OXIDATIVE WORK DONE

Flow Rate	Concentration	Time	Total Volume	Total Ozone	C x T Value
l/m	ug/ml	min	ml	ug	
1/32	30	32	1000	30,000	960
1/16	30	16	1000	30,000	480
1/8	30	8	1000	30,000	240
1/4	30	4	1000	30,000	120
1/2	30	2	1000	30,000	60

CONCENTRATION x TIME = CT VALUE

Ozone has been used to clean water for people in big cities for over 100 years. The water engineers have a value that they use to measure the effectiveness of ozone in cleaning water. This is the CT value. It is a product of concentration x time (C x T). This information has been overlooked by the medical fraternity. The time that ozone is in contact with human tissue is of great importance. Ozone therapy has only considered concentration and total volume of ozone, and has ignored the time factor.

When doing rectal insufflation, if the concentration is 45 ug/ml, and the length of time of exposure is 2 minutes, the CT value will be $45 \times 2 = 90$. If however, the exposure time is 16 minutes, the CT will be $45 \times 16 = 720$. A higher CT value is a more desirable figure, because more oxidation work can be done.

In order to be able to lengthen the time of exposure, it is necessary to have a very low flow rate. The ozone industry has generally rated its equipment with a flow rate of 1/2 liter/minute. However, by using a regulator producing a flow rate of 1/32 liter/minute, it is possible to get exposure times of 30 minutes. Since ozone concentration in general is inversely proportional to flow rate, the lowest flow produces the highest concentration. For example, at 1/32 liter/minute, our Beta generator produces 50 ug/ml. Rectal insufflation for 30 minutes will produce a CT value of $50 \times 30 = 1500$. There is a clear advantage to low flow rate insufflation, and it also reduces the problem of cramping.

There is also the added benefit of very low oxygen usage. Remember that oxygen by itself does not produce the therapeutic effects of ozone. The patient often needs to have a series of colonics before beginning insufflation, and an enema before each insufflation. The person taking rectal insufflation should also take quality acidophilus, or yogurt.

OZONATED WATER

For prevention, a major benefit can be derived from regularly drinking ozonated water. Water is a fascinating substance, and we all take it for granted. Chemically it is considered to be one oxygen atom bound with two hydrogen atoms. The bond angle between the two hydrogen atoms is known to be variable, depending on the amount of energy in the molecule. Radionics research has shown that water whose bond angle is 101 degrees is 'dead' water, bereft of life-giving energy.

When water is distilled, the bond angle expands to 120 degrees upon evaporation, but collapses to 101 degrees upon condensation, and is therefore 'dead'. A bond angle of 103 degrees corresponds to average water. A bond angle of 106 degrees produces activated, energized water, and is attainable by placing a magnet, north pole inward, against the water container. The highest energy obtainable in liquid water is a bond angle of 109.5 degrees, and this is attainable only by ozonating water at 4 degrees C. Ozone will not stay in water for very long, even at 4 degrees, so it is best to freshly ozonate water and drink it immediately on an empty stomach, rather than make a large amount and try to store it. It can be stored for longer times by freezing it in plastic containers.

OZONATING THE LYMPH

Women have an anatomical advantage, in that vaginal insufflation requires no preparation, and can be administered for very long periods of time. The gas will usually find its way into the uterus, out the Fallopian tubes, and then into the abdominal cavity. Liver problems and pelvic inflammatory disease (PID) can be addressed in this way. This is also a good way of getting ozone into the lymph system.

For men, cleaning the lymph system is not as easy, and requires use of a body suit or a steam cabinet. The body suit is a less than popular aesthetic experience. The ozone steam sauna cabinet, however, is a pleasurable experience. Because of the moist heat, the pores are open, and the capillaries are dilated. The ozone enters and oxidizes toxins in the fat, the lymph and the blood. The skin is the largest organ of elimination. The person sweats the oxidized toxins back out, avoiding the dump of toxins to the liver and colon which can bring on the symptoms of toxic shock overload. Instead, the person emerges from the steam cabinet feeling extremely relaxed and mellow, and ready for bed. This is an ideal way of counteracting the stress of the day, while building up the immune system.

BREATHING OZONE

Ozone is safe to breathe when it is bubbled through extra virgin olive oil. This is an excellent therapy for asthma and bronchitis and pneumonia, especially when combined with magnetic therapy. Breathing of ozone has been practiced in North America for over 100 years.

When ozone is bubbled through olive oil continuously for weeks, the oil starts to change. First it loses its color, then it begins to foam, and eventually it becomes a stiff gel. If it is kept refrigerated at 40 degrees F, this gel will retain its effectiveness for more than ten years. This gel applied to the skin has many uses: on cuts, scrapes and burns; insect bites, diaper rash, eczema, impetigo, herpes, etc. Ozonated gel is 95% as active as ozone gas.

The ozonated gel liquefies as soon as it reaches skin temperature. It is an excellent lubricant for intercourse and provides more protection than the highly touted condom for the prevention of disease, due to the bactericidal, virucidal and fungicidal action of ozone.

It is an excellent product for your pet as well. If it is spread on the backs of a cat's paws, the cat will lick it off and ingest it that way.

Plasmafire Intl has been producing and selling ozonated olive oil as Nature's Gift since 1993.

NATURE'S GIFT

In 1954, Dr. William Turska of Mist, Oregon, had ozonated olive oil tested at Texas A&M University. They discovered that this process created a long chain ozonide, C₁₀H₁₈O₃.

When ozone is bubbled through extra virgin olive oil continuously for about three weeks, the olive oil gels into a paste or salve. This gel we call Nature's Gift, and it has many therapeutic uses. When used for massage, the ozonide enters the tissue and oxidizes lactic acid and toxins, and this has proven to be an effective treatment for many skin conditions.

"Ozonated olive oil is an effective adjunct treatment for inflammation of the skin, such as dermatitis and seborrhea. Ozonated olive oil is helpful in bacterial infections of the skin, including carbuncles, cellulitis, ecthyma, erysipelas, erythasma, folliculitis, furuncles, granuloma annulare, impetigo, paronychia, psoriasis, ringworm, skin yeast, staphylococcus, sweat gland infections, and tinea versicolor. It is also helpful for bed sores (decubitus ulcers) and for the post-surgical treatment of wounds to prevent secondary infections."

- Dr. H.E.Sartori

"Ozonated olive oil, kept refrigerated, retained its effectiveness for over ten years, in tests conducted by German researchers. It is particularly indicated for the treatment of all skin infections and dermatomycoses, and is excellent when used after gaseous ozone treatment by limb bagging. It retained its effectiveness for many hours after application."

- Dr. J. Hansler

Nature's Gift can be used for topical application on dry skin, eczema, psoriasis, seborrhea, athlete's foot, sunburn, insect bites, skin ulcers, burns, cuts and scrapes, and diaper rash. It is excellent for makeup removal (avoid the eyes) and as a skin moisturizer.

In addition, it is very useful for dealing with various problems in animals. It can be applied directly to

cuts and incisions or fed to them. It can be spread on the backs of a cat's paws, from which it will be licked.

Nature's Gift should be stored in the refrigerator at 40 degrees Fahrenheit for long term potency.

Olive oil that has ozone bubbled through it for a short time will smell of ozone but unless the oil has gelled into a stiff salve that will not run when the jar is inverted, there is little oxidative power in it.

DOSAGE AND FREQUENCY

When it comes to the administration of medical ozone, there is a wide difference of opinion amongst doctors regarding concentration, dosage and frequency:

Dr. Carpendale said that a medium concentration is necessary to kick-start the immune system initially, followed by lower concentrations. He believes that continued high concentrations may be immuno-suppressive, based on his experience with T-4 cell counts.

Dr. Turska recommended injections at low concentrations, initially three times per week, then twice per week, then weekly for as long as necessary.

Dr. Beyrle recommends injection every four days at medium concentration.

Dr. Wang gives daily injections at medium concentration and direct injection into breast tumors.

Dr. Freibott recommends very high concentrations at low dosages, with the emphasis on saturating the blood, using rectal insufflation.

Dr. Sartori reports good success with AIDS with high concentrations and very high dosages, every hour for 12 hours per day, for 21 days.

Dr. Rilling's classic "The Use of Ozone in Medicine" gives many recommendations on dosage and concentration.

The important thing to remember is that all physicians report good results, regardless of concentration or volume used. Ozone is not a drug, and should not be treated as such.

There is no evidence that long term treatment on a daily basis has any detrimental effect. Doctors who have used it for decades have only positive results to report. Ozone is non-toxic and provides the safest medical therapy ever devised. There is no evidence of free radical damage. On the contrary, ozone has been proven to stimulate the production of superoxide dismutase, catalase and glutathione peroxidase, and reductase, which are the enzymes that protect the cell from free radical damage, so ozone actually prevents free radical damage.

It is known that Vitamin C is antagonistic to ozone, although research has shown ozone does not break down Vitamin C in the body. Persons taking megadoses of Vitamin C should take the ozone treatment first, wait one hour, and then take the Vitamin C.

If direct injection is the method of application chosen, the rate of injection should be very slow, about 5 cc per minute. There is no risk of embolism, as only nitrogen forms a dangerous gas bubble. If coughing results from too much ozone being injected too quickly, the reaction can be halted by drinking one or two glasses of orange juice. This will quickly stop the ozone outgassing in the lungs through the action of the Vitamin C. The patient will be more comfortable and will retain a positive attitude towards the therapy.

METHODS OF APPLICATION

Since ozone therapy was first practiced in the 1880s, many methods of administering ozone have been developed. They can be broken down into five categories :

Injection - autohemotherapy; or direct injection into a vein, artery, muscle, joint; or directly into a tumor.

1. Insufflation - in the ear, vagina, rectum, urethra
2. Inhalation - bubbled through olive oil
3. Ingestion - ozonated water
4. Transdermal - subatmospheric; bagging; body suit; ozonated olive oil; cupping with a funnel; steam sauna

1) Direct Injection vs. Autohemotherapy

Autohemotherapy was developed by Dr. Hans Wolff in 1961 as an alternative to direct injection. Dr. Wolff developed a technique for withdrawing 50 - 500 cc of blood into a container, injecting ozone into it and then infusing it back into the patient over 20 minutes as an IV drip.

There were several problems to be overcome. Blood coagulates when it is exposed to the air, so a method had to be found to prevent coagulation. The liver normally secretes heparin to prevent clotting inside the body. Sodium heparin was found to be effective in preventing clotting outside the body. Later, when heparin was seen to cause problems in some patients with liver problems (especially cirrhosis), sodium citrate was adopted by some doctors. However, heparin is still widely used because sodium citrate is less effective, even though heparin is hard on the liver and is known to suppress the immune system.

A suitable vessel to hold the blood was required, and the Hansler corporation of Germany began to manufacture and market a vacuum flask kit to make it easier for doctors to perform this therapy. Hansler GmbH is the oldest medical ozone generator company still in business, based upon Dr. Joachim Hansler's 1957 patent of a dual-dielectric corona discharge ozone generator tube.

There are a number of advantages of direct injection vs. autohemotherapy :

1. there is no need for heparin, which can damage the liver and is immune-suppressive, and may cause uncontrolled bleeding
2. there is no need for an expensive, disposable vacuum flask kit and no contaminated equipment to dispose of afterward
3. there is no need to take time to mix the ozone into the blood, or wait for the reinfusion drip
4. since the heart will pump all the blood past the point of injection in eight minutes, all 6 liters of the blood are cleaned, instead of just 50 - 500 cc
5. it is easier to initiate the desirable healing crisis
6. fewer treatments are required because a better job is done each time
7. a tumor can be injected directly and then the resulting fluid aspirated with the same needle

2) Insufflation

Insufflation is very useful, easily done, inexpensive, and now widely used in the home.

Insufflation in the ear is excellent for: ear infections; mastoiditis; hearing problems caused by candida; tinnitus; (and beyond the ear to) sinusitis; macular degeneration; retinitis pigmentosa; head colds; flu; bronchitis; asthma; Alzheimer's; Parkinson's; even brain cancer.

Vaginal insufflation is used for any vaginal, uterine, ovarian or lower abdominal problem, including pelvic inflammatory diseases, fibroids, etc. The ozone will enter the lymph system from vaginal insufflation, as well as the blood stream.

Rectal insufflation requires a preparatory enema. It is used for colon problems such as colitis, ileitis, irritable bowel, Crohn's disease, and colon cancer.

Urethral insufflation is used for bladder infections, STDs, inflammation of the ureter, prostate enlargement, and bladder and prostate cancer.

3) Inhalation

Ozone can be inhaled if it is first bubbled through extra virgin olive oil. This is useful for asthma due to bacterial or viral infection. Repeated treatments over 3 - 6 weeks for 15 - 20 minutes at a time are usually sufficient. Simultaneous magnet therapy is useful and can be easily done by placing a magnet (3" x 5"; 3500 gauss) on the chest with the north pole facing the body.

4) Ingestion

Six to eight glasses a day will establish a high level of oxygenation in the body and assist detoxification. Bubble ozone into a glass of water for 5 - 10 minutes, then drink on an empty stomach. This will also destroy helicobacter pylori in the stomach, which is the cause of ulcers.

5) Transdermal

Transdermal application of ozone has existed for 120 years, and recently has been growing in popularity. The skin is semi-porous to oxygen, and 7% of normal respiration is transdermal. There are several transdermal ozone application techniques:

- A) Subatmospheric
- B) Bagging a limb
- C) Body suit
- D) Ozonated olive oil
- E) Cupping with a funnel
- F) Steam cabinet

A) Subatmospheric application requires an apparatus to enclose a limb, reduce pressure by means of a vacuum pump and direct ozone into proximity with the desired area. This technique has proven useful in certain difficult problems, such as gas gangrene and open ulcers. It is not widely used at present because of the expense of the equipment and its lack of availability.

B) Bagging a limb is very similar, but requires only a clear plastic bag in order to confine the ozone to the area being treated. The limb is moistened first, in order to aid the penetration of ozone through the skin, then enclosed in the plastic bag and the ozone is introduced by means of silicone tubing

from the generator into the bag. The top of the bag is securely closed with either a cloth strip or an elastic strap as a cuff. If the flow rate is to be above 1/8 l/m, then an outlet from the bottom of the bag will be necessary to allow the excess ozone to leave, and avoid pressurization. If the flow rate is kept very low, say 1/16 l/m or 1/32 l/m, there is no need to have an outlet, as the bag will not overflow in a 30 minute treatment. This technique has been in use for many years, and is especially useful with impaired circulation in diabetic legs, removing the threat of amputation.

C) A body suit is composed of ozone-resistant material, typically Tyvek or nylon, which is sealed at the wrists, neck and ankles (if there are no attached booties). It is necessary to shower first and then enter the suit while still wet, to aid ozone transference. The silicon tubing from the generator is introduced into the suit either through the neck opening or up the sleeve. Ozone is introduced for 30 minutes at a rate of 1/8 l/m or 1/4 l/m. This method is losing favor due to the clammy, sticky feel of the suits on the skin, as the wet skin surface cools and dries.

D) Ozonated olive oil has been used as a topical application for 100 years and its efficacy is well established for problems such as acne, cuts, scrapes, bruises, burns, eczema, sunburn, skin infections, etc. It is also useful to apply it to the skin following a session of limb bagging.

E) Cupping with a funnel is a more recent transdermal technique where ozone is introduced into a very restricted area at a very low flow rate. First the area to be treated (typically the liver, pancreas, spleen, intestine, kidney or adrenal) is moistened with a warm washcloth, and then a plastic funnel is held firmly over the area. The flow rate is restricted to 1/32 l/m in order to prevent pressure buildup under the cup, and possible leakage. Treatments typically run for 20 - 30 minutes. Good results are obtainable with daily application for hepatitis, diverticulitis, pancreatitis, kidney infections and adrenal insufficiency.

F) The sixth transdermal technique was developed by Dr. John Kellogg in 1880, and revived by Plasmafire Intl in 1994, to take advantage of the therapeutic possibilities of using hyperthermia in conjunction with ozone therapy. The person sits in an ozone-resistant steam cabinet, with the head out, and the body surrounded by warm steam. The steam causes the pores to open fully and the ozone, introduced into the cabinet by silicon tubing from the generator output, can penetrate fully into all the tissue - the blood, the lymph and the fat. Since the majority of toxins are held in the lymph and the fat, this treatment is the most effective way to eliminate them from the body. The skin is the largest organ of elimination, and the majority of the oxidized toxins are sweated out, sparing the liver and kidneys most of the extra work.

Hyperthermia itself is a very effective technique, many thousands of years old, recommended by Hippocrates. It results in a "false fever" reaction, which simulates the body's own defense mechanism. With the addition of ozone, the treatment becomes doubly powerful. As the toxins are oxidized, and eliminated from the body, the fat containing them is no longer needed, and also leaves. Weight loss of 30, 40, or 50 lbs over a period of months has been reported, with no change in diet. The skin becomes smooth, soft and free of blemishes. Symptoms of a whole host of diseases disappear as the toxins leave the system and the body is enabled to heal itself.

Unlike other methods of ozone application, employing ozone in a steam sauna will induce the "healing crisis", which feels like having the flu for a few days. People should be informed of this effect so they can be prepared, and welcome it as a sign of beneficial healing. Skin rashes are common as the toxins are pushed out through the skin rapidly. Often the rash is very itchy, and this can be

alleviated by taking protease enzymes, and applying Gardener's Dream Cream.

The more frequent the treatments, the more rapid the healing, and the more severe the healing reactions will be. It may become so uncomfortable that the person will need to reduce the frequency of treatments from once daily to once weekly. Typical treatments are once daily for 30 minutes duration. Persons with heart conditions should be limited to 15 minutes at a lower temperature for the first few sessions, increasing to 20, 25 and then 30 minutes, as the body adjusts to the thermal stress over time. People who have had a previous stroke should not do saunas, but can do ozone in other ways.

Flow rate of ozone into the cabinet is at 1/2 l/m in order to fill the large volume and overcome the loss of ozone to heat. Concentration ranges from 35 to 40 ug/ml. A series of treatments usually consists of 10-30 applications.

The effect of the ozone on any particular organ can be intensified by cupping with a funnel while in the steam cabinet. This is especially effective with hepatitis, diverticulitis, pancreatitis and cancer. It also involves the person in actively taking responsibility for initiating the healing process. Flow rate for cupping should be at 1/8 l/m, with concentrations from 40 - 50 ug/ml.

Novel application techniques are: placing the output tubing in the armpit and holding the arm against the body, so that the ozone enters the lymph system; placing the end of the tubing in the mouth to treat the teeth, (carefully avoiding inhaling, or swallowing); and sitting on the end of the tubing, so that ozone enters the perineum area.

Transdermal application of ozone combined with hyperthermia in the steam cabinet is the treatment of choice for all cancers (brain cancer treatment can be supplemented with ozone insufflation in the ear at 1/32 l/m). Cancer tumor cells are tightly packed as they try to force their way in between other cells, and they are thus less able to shed heat. This accounts for effect that heat stress has in killing cancer. Both heat stress and ozone kill cancer, so this treatment offers the best opportunity to eliminate cells which are fermenting sugar anerobically, halt metastasis and restore healthy aerobic function. Ozone is able to seek out and destroy all the cancer cells with more certainty than the surgeon's crude scalpel. In addition, ozone will oxidize the toxins which caused the original problem, and thus prevent recurrence. This is in stark contrast to chemotherapy, which is massively immune-suppressive, and radiation which actually causes cancer.

Using ozone with hyperthermia in the steam sauna will cleanse all the tissues of the body and provoke the healing crisis, which is not seen with other delivery methods, proof that this is the best way to achieve thorough cleansing of all toxins.

It is critical that the bowels remain open during these treatments, in order that oxidized toxins are completely eliminated from the system and not reabsorbed. The best methods of insuring this is by ingestion of 6 - 8 glasses of ozonated water daily (always on an empty stomach), large amounts of fiber (such as psyllium or pectin), large amounts of natural Vitamin C (3000 mg three times daily), flax oil and/or Homozon.

In combination with a comprehensive diet plan, parasite, liver and colon cleanses, and suitable exercise, this program offers the best chance for a person to recover optimum health.

Products and methods for dealing with the healing response rash:

- 1) Liver flush
- 2) Protease enzymes
- 3) Ozonated olive oil, topically
- 4) Gardener's Dream Cream, topically
- 5) Activated charcoal slurry, internally
- 6) Vitamin B12 : up to 1500 micrograms at a time
- 7) Oat juice, topically
- 8) Hydrogen peroxide 3%, topically
- 9) Colloidal silver, topically
- 10) Emu oil, topically
- 11) Vodka, topically
- 12) The Itch Cream, topically
- 13) Calcium lactate
- 14) Lycopodium powder
- 15) Homeopathics: Psoriaheel; Schwef-Heel
- 16) Boric acid powder, topically
- 17) Bentonite powder paste, topically
- 18) Safflower oil, topically
- 19) Coconut palm butter, topically
- 20) Cumarindine
- 21) Nature Dream "Cu-Well" Cream
- 22) Zambesia Botanicals herbal skin cream
- 23) Bathe in tub with Masada Dead Sea Salts
- 24) Activated charcoal slurry

Ozone Protocols

Condition	Technique					
	Insufflation				Cupping	Sauna
	Ear	Vagina	Rectum	Urethra	w/funnel	
AIDS	no	yes	yes	no	no	Yes
Arthritis	no	yes	yes	no	no	Yes
Lymphoma	no	yes	no	no	yes	Yes
Brain cancer	yes	no	no	no	no	Yes
Breast cancer	no	yes	no	no	yes	Yes
Colon cancer	no	yes	yes	no	no	Yes

Cervical cancer	no	yes	no	no	no	Yes
Lung cancer	no	no	no	no	yes	Yes
Prostate cancer	no	no	yes	yes	no	Yes
Cancer, other types	no	yes	yes	no	yes	Yes
Previous stroke	yes	yes	yes	no	no	No
Previous heart attack	yes	yes	yes	no	yes	low heat
Pregnancy	yes	no	yes	no	yes	No
Circulatory problems	no	yes	yes	no	no	Yes
Heart Disease	yes	yes	yes	no	yes	low heat
Multiple Sclerosis	yes	yes	yes	no	no	low heat
Alzheimer's	yes	no	no	no	no	Yes
Asthma	yes	no	no	no	yes	Yes
Bacterial infection	yes	yes	yes	no	yes	Yes
Bladder infection	no	no	no	Yes	yes	No
Viral infection	yes	yes	yes	no	no	Yes
Herpes	no	yes	yes	yes	yes	Yes
Cervical dysplasia	no	yes	no	no	no	No
Candida and CFS	yes	yes	yes	no	no	Yes
Cataracts	yes	no	no	no	no	No
Glaucoma	yes	no	no	no	no	No
Macular degen.	yes	no	no	no	no	No
Retinitis pigmentosa	yes	no	no	no	no	No
Colitis, Crohn's, IBS	no	yes	yes	no	yes	yes
Diabetes	no	yes	yes	no	Bagging	Yes
Diverticulitis	no	no	yes	no	yes	Yes

Emphysema	no	no	no	no	yes	Yes
Fibromyalgia	yes	yes	yes	no	yes	Yes
Hepatitis	no	yes	yes	no	yes	Yes
Lupus	yes	yes	yes	no	no	Yes
Rheumatoid Arth.	yes	yes	yes	no	no	Yes
Sinusitis	yes	no	no	no	no	No
Tinnitus	yes	no	no	no	no	No

CONTRAINDICATIONS For Ozone Protocols

Autohemotherapy: Thrombocytopenia; recent internal bleeding; liver under stress

Intravenous: Recent internal bleeding

Sauna: Previous stroke; pregnancy

Ozonated water: None

Limb bagging: None

Ear Insufflation: None

Vaginal insufflation: None

Rectal insufflation: None

In addition, all forms of ozone therapy are contraindicated for people who have had a transplant of tissue from another person, as the body's immune system will be galvanized into attacking the transplant.

HYPERTHERMIA

CLINICAL EXPERIENCE WITH HYPERTHERMIA

JOURNAL OF ONCOLOGY, 1993

INDIANA UNIVERSITY MEDICAL CENTER

ABSTRACT

The authors have reviewed the medical records of 421 sessions of hyperthermia treatments in 73 patients treated between 1987 and 1992 at the University Heights Cancer Center and the Indiana University Medical Center in Indianapolis, Indiana.

All patients had previously "failed" conventional radiation therapy, chemotherapy and surgery.

Temperatures attained during the course of therapy on each patient were averaged and the results were evaluated for complete, partial or no response.

Responses were defined as:

1. Complete response: Lesions completely disappeared during treatment and response was maintained for a minimum of six months
2. Partial response: Lesions that were reduced in size more than 50%
3. No response: Less than 50% reduction in tumor size during the treatment

Response varied somewhat according to histology and anatomical site of treatment; however,

1. complete response was achieved in 45%;
2. partial response in 48%;
3. and no response in 7% of the patients.

The response achieved varied with temperature attained and a minimum temperature of 40 degrees C for 40 minutes produced the greatest number of responses. Response to hyperthermia was directly related to the temperature achieved and the length of time the temperature was applied.

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"Hyperthermia is the clinical application of therapeutic heat in the treatment of disease. Today hyperthermia is recognized as a standard treatment in the management of malignant tumors. It is especially recommended for metastatic tumors where other treatment methods have a poor history of success.

Tumor cells have specific environmental requirements, largely dependent on blood flow. When there is an increase in the temperature around the tumor, there is a corresponding increase in the blood flow to that area, as the hypothalamus attempts to regulate body temperature. When heat is applied to the tumor and its surrounding tissue, the temperature rises to destructive levels, because the tightly packed cells of the tumor are not as easily able to cool themselves as the surrounding tissue.

Repeated heating to 107-113 degrees F. can cause the tumor cells to be killed. Tumor response has been found to be from 40 - 80 %.

A side benefit of hyperthermia treatment has been substantial pain reduction in a majority of patients.

Hyperthermia is now an FDA-approved cancer therapy for breast cancer."

- Dr. Haim Bicher

THE HEALING RESPONSE

A healing response is in effect when the body is in the process of eliminating toxins. Reactions may be mild or they may be severe. One should expect this and work toward it. The body's inherent desire is perfect health and we have the ability to earn our way back to that state. To do so, the body must go through an elimination process called the healing crisis.

A healing response results when all body systems work in concert to eliminate waste products and set the stage for regeneration. Old tissues are replaced with new, and stored toxins are eliminated. A cleansing, purifying process is underway and stored wastes are more easily removed. Sometimes

there is pain of greater intensity that the lower level of chronic problem gives, but it is usually of short duration.

The response will usually bring about past conditions in reverse order to the original problem. People often forget the diseases or injuries they have had in the past, but are usually reminded during a healing crisis. Reactions may include skin eruptions, nausea, headache, sleepiness, fatigue, diarrhea, a cold, ear infections, boils, or any other way the body uses to eliminate toxins. The crisis usually lasts three days, but if the energy of the patient is low, it may last for a week or more.

The body needs juices, and especially water, preferably ozonated, to help carry off the toxins. Charcoal is also helpful, taken orally. This is a time for rest - mental as well as physical rest.

One episode is not always enough for a complete cure. The person in a chronic state, who has gone through many disease processes in life, must go through these processes again. Often the crisis will come after one feels his very best, setting the stage for the action. Most people feel an energy boost the first few days. Then toxins are dumped into the blood stream for elimination by way of the liver, kidneys, spleen, skin, bladder and colon. Listen to your body and go as slowly as your body needs to so that your cleansing is gradual and comfortable.

With a more serious condition there may be many small crises to go through before the final one is possible. Everything must be considered and given its proper place in the build-up to a healing crisis. One should expect it and work towards it. Then the goal of optimum health can be achieved.

COLLATERAL THERAPIES

Ozone is not a drug and it is not a magic bullet. It is a therapeutic tool of great power which can aid the body in regaining health. However, in the end, it is the immune system that heals the body. The immune system is controlled by the midbrain, the limbic system, through the thymus. The limbic system also controls the emotions. If the emotions are disrupted, the immune system is suppressed. Every serious disease has an emotional component. If this is not dealt with, physical treatments will have little or no effect.

Recent research by Dr. Glen Rein at the Heartmath Institute has shown that the thymus, the general of the army of the immune system, is regulated by sympathetic resonance with the heartbeat. By measurement with an electrocardiogram, Dr. Rein was able to show that irregular heartbeat, as caused by emotional upset, produced erratic thymus function, which suppressed the immune system. Dr. Rein also found that it was possible to train people to control their heartbeat through biofeedback, and raise their level of immune function.

Since ozone has a well-known calming and analgesic effect, and is used as a treatment for arrhythmia, ozone therapy causing restoration of heartbeat regularity plays an important role in enhancing the immune system, along with stimulating production of interleukin-2 and gamma interferon. Prolonged use of ozone enhances the immune system by contributing to a calm, even heartbeat, produced by a well-oxygenated heart pumping clean, bright red blood through plaque-free arteries.

By using the ozone steam cabinet, the person easily enters into a calm and relaxed state of mind, which facilitates the unearthing of deep-seated emotional problems by a skilled therapist. The resolution of such problems often has a greater importance in the reattainment of health than all other therapies.

Exercise is also an important adjunct to ozone therapy, and must not be overlooked. The lymph system contains the majority of the water in the body and since the lymph system has no pump like the heart, the lymph tends to become toxified and sluggish. The use of a rebounder followed by the ozone steam cabinet will go a long way towards cleaning the lymph.

A holistic approach should include work on the psyche, exercise, and nutrition, as well as ozone. The combination of ozone, exercise, nutrition and emotional calm should ensure greater vitality and fewer degenerative diseases in our aging population as we enter the 21st century, and at an affordable cost.

SUPEROXYGENATION FOR HEALTH

Oxygen is the most vital element required for human life and it is the key to good health. We can survive without water for a week and go without food for a month, but we can only live a few minutes without oxygen. Oxygen is the life-giving, life-sustaining element. All body activities require oxygen. Through oxidation, the body generates heat and energy from its fuel, and disposes of wastes and microbes.

Our bodies are two-thirds water. Since the water in our bodies is itself 8/9 oxygen by weight, we are therefore composed of nearly 60% oxygen.

The best way to optimize health is to oxygenate every cell in our body. The more oxygen we have in our system, the more energy we produce, and the more efficiently we can eliminate wastes. Good health is dependent on the production, maintenance and flow of energy, which is produced by the oxidation of sugar. Oxidation is central to metabolism, circulation, respiration, digestion, assimilation and elimination. Oxygen purifies the blood, keeping it free of cellular waste buildup. Sufficient oxygen allows the body to rebuild itself and maintain the immune system. The basic requirements for each cell are sugar, amino acids, minerals, hormones, enzymes and oxygen.

The Cause of Disease

The link between insufficient oxygen and disease has been firmly established. Insufficient oxygen can result in anything from mild fatigue to life-threatening disease.

Dr. Otto Warburg was awarded a Nobel Prize for Medicine in 1931 and again in 1944, the only person to win two Nobels in Medicine. He said, "Cancer has only one prime cause. The prime cause of cancer is the replacement of normal oxygen respiration of body cells by an anerobic (oxygen-less) cell respiration."

Once the level of oxygen available to a cell drops below 40% of normal, the cell is forced to switch to an inferior method of energy production - fermentation. The cell then loses its governor on replication. It produces ATP that is inferior in quantity and quality, and its wastes are lactic acid and carbon monoxide. The acidity surrounding it can be the trigger for T-cells to release enzyme growth factors. Stimulated by EGF, the anerobic cell begins to replicate wildly, a condition we call cancer. If a parasite is involved in the area, the acidity is greater and the cancer growth even more rapid.

Dr. Warburg pointed out that any substance that deprived a cell of oxygen was a carcinogen, if the cell was not killed outright. He stated in 1966 that it was useless to search out new carcinogens, because the end result of each one was the same, cellular deprivation of oxygen. He further stated that the incessant search for new carcinogens was counter-productive because it obscured the prime cause, lack of oxygen, and therefore prevented appropriate treatment.

CONFIRMATION OF DR. WARBURG'S WORK

The National Cancer Institute endorsed Dr. Warburg's findings in 1952.

This research was continued by Dr. Harry Goldbatt, who published his findings in the Journal of Experimental Medicine in 1953. His research confirmed that lack of oxygen plays the major role in causing cells to become cancerous.

Dr. Albert Wahl said, "Disease is due to a deficiency in the oxidation process of the body, leading to an accumulation of toxins. These toxins are ordinarily burned in normal oxidation".

Dr. Wendell Hendricks of the Hendricks Research Foundation wrote: "Cancer is a condition within the body where the oxidation has become so depleted that the body cells have degenerated beyond control. The body is so overloaded with toxins that it sets up a tumor mass to harbor these poisons and remove them from general activity within the body. Dr. Hendricks further stated, "The true cause of allergy is a lowered oxidation process within the body, causing the body to be sensitive to substances entering. Only when the oxidative mechanism is restored to a higher state of efficiency can the sensitivity be eliminated."

Dr. Stephen Levine stated, "Hypoxia, or the lack of oxygen in the tissues, is the fundamental cause of all degenerative diseases."

Dr. Norman McVea said, "When the body has sufficient oxygen, it is able to properly eliminate toxic wastes from the system. Natural immunity is enhanced when the system is not burdened with a heavy buildup of toxins."

In the August 22, 1980 edition of the scientific journal SCIENCE, Vol. 209, there was a report written by Dr. F. Sweet, et al, entitled: "Ozone Selectively Inhibits Growth of Human Cancer Cells." It stated, in part, "The growth of human cancer cells from lung, breast and uterine cancers was selectively inhibited in a dose-dependent manner by ozone at 0.3 to 0.8 parts per million of ozone in ambient air during eight days of culture. Human lung diploid fibro-blasts served as non-cancerous control cells. The presence of ozone at 0.3 to 0.5 parts per million inhibited cancer cell growth at 40 and 60% respectively. The non-cancerous lung cells were unaffected at these levels. Exposure to ozone at 0.8 parts per million inhibited cancer cell growth more than 90% and control cell growth less than 50%. Evidently the mechanisms for defense against ozone damage are impaired in human cancer cells."

The evidence from these doctors' research is conclusive. Oxygen plays the primary role in health and well-being. It is important to note that fear, worry and depression all interfere with free breathing and thus reduce oxygen uptake. Disease can then result.

PREVENTION OF CANCER

We now understand the chemical mechanisms of respiration and fermentation at the cellular level and how oxygen deficiency leads to cancer. This oxygen deficiency, or hypoxia, can be caused by many factors. Some poison may reach the cell and prevent oxygen uptake, or the excretory duct of a gland may become plugged up, as in breast cancer caused by lymph gland plugging. But the end result is the same. If the cell is chronically starved for oxygen, yet does not die, eventually cancer will result. Frequent small doses of respiratory poisons are therefore more dangerous than a single large dose, where there is the chance that the cells will be killed rather than become anerobic and eventually cancerous.

All carcinogens impair cellular respiration. The word carcinogen is an empty word. The continual search for more carcinogenic substances is an utter waste of time and money, because this obscures the true cause of cancer, which is the oxygen starvation of the cell. It also prevents the proper treatment of cancer with oxygen therapies, because of misunderstanding the cause.

To destroy cancer, what is required is the introduction of massive amounts of singlet oxygen at the cellular level. This can be done by ingesting Homozon or introducing ozone. These two treatments have been in use for over 100 years, with excellent success. They must be taken repeatedly, as the beneficial effect is cumulative.

Ozone also has the ability to prevent cancer. If sufficient oxygen is provided to the cells so that they never drop below 40%, they will stay healthy, barring any chemical or radiation poisoning. It is as simple, and as difficult, as that. Many people today are using ozone generators to keep their cellular oxygen levels high, to prevent disease.

Ozone increases microcirculation of the blood, by oxidizing plaque in the arteries, and reducing the clumping of red blood cells. This enables them to pick up oxygen in the lungs, and increases their flexibility, which is crucial to passage through the fine capillaries.

People often ask whether they will have to continue to take ozone for the rest of their life. We say that if you want to prevent toxins from building up that could result in your cells from being deprived of oxygen and turning anerobic, then taking ozone is a small price to pay. Ozone taken on a daily basis ensures that the entire system receives the oxygen it needs, as well as eliminating toxins and any bacteria, viruses or cancer cells. Repeated treatments with ozone are required because viruses and bacteria seem to be more susceptible at different stages of their growth cycle. **The beneficial effects of ozone are cumulative**, as the body becomes cleaner, stored toxins are eliminated and the biological terrain is steadily improved. In this way, cancer is prevented.

What Does Ozone Do?

Ozone:

Inactivates viruses; oxidizes bacteria, yeast, fungi, parasites, protozoa, cancer cells

Stimulates the immune system, speeds healing

Cleans arteries and veins, improving circulation

Purifies the blood and the lymph

Oxidizes toxins, facilitating their excretion

Normalizes hormone and enzyme production

Reduces inflammation

Reduces pain, calms nerves

Prevents shock

Prevents stroke damage

Reduces cardiac arrhythmia

Improves brain function and memory

Scavenges free radicals

Chelates heavy metals, working well in conjunction with EDTA

Stimulates production of protective cell enzymes

HOW DOES OZONE WORK BIOCHEMICALLY

Inactivation of bacteria, viruses, fungi, yeast and protozoa: Ozone disrupts the integrity of the bacterial cell envelope through oxidation of the phospholipids and lipoproteins. In fungi, ozone inhibits cell growth at certain stages. With viruses, the ozone damages the viral capsid and upsets the reproductive cycle by disrupting the virus-to-cell contact with peroxidation. The weak enzyme coatings on cells which make them vulnerable to invasion by viruses make them susceptible to oxidation and elimination from the body, which then replaces them with healthy cells.

1. Enhancement of circulation: In circulatory disease, a clumping of red blood cells hinders blood flow through the small capillaries and decreases oxygen absorption due to reduced surface area. Ozone reduces or eliminates clumping and red cell flexibility is restored, along with oxygen carrying ability. Oxygenation of the tissues increases as the arterial partial pressure increases and viscosity decreases. Ozone also oxidizes the plaque in arteries, allowing the removal of the breakdown products, unclogging the blood vessels.
2. Stimulation of oxygen metabolism: Ozone causes an increase in the red blood cell glycolysis rate. This leads to the stimulation of 2,3-diphosphoglycerate (2,3-DPG) which leads to an increase in the amount of oxygen released to the tissues. Ozone activates the Krebs cycle by enhancing oxidative carboxylation of pyruvate, stimulating production of ATP. Ozone also causes an increase in the NADH reducing process and helps to oxidize cytochrome C. There is a stimulation of the production of the enzymes which act as free radical scavengers and cell wall protectors: glutathione peroxidase, glutathione reductase, catalase, and superoxide dismutase. Production of prostacyclin, a platelet aggregation inhibitor, and a vasodilator, is also induced by ozone.
3. Formation of peroxides: Ozone reacts with the unsaturated fatty acids of the lipid layer in cellular membranes, forming hydro peroxides. There is a synergistic effect with cellular-formed H₂O₂. Lipid peroxidation products include alkoxy and peroxy radicals, singlet oxygen, ozonides, carbonides, carbonyls, alkanes and alkenes.
4. Dissolution of malignant tumors: Ozone inhibits tumor metabolism. In addition, ozone oxidizes the outer lipid layer of malignant cells and destroys them through cell lysis (break-down). Phagocytes produce H₂O₂ and hydroxyl and ozone to kill bacteria and viruses. The generation of hydroxyl by killer cells is critical to their cytotoxic capability. Ozone stimulates conversion of arginine to citrulline, nitrite and nitrate by phagocytes, promoting their action on tumors.
5. Activation of the immune system: Ozone administered at a concentration of between 30 and 55 ug/cc causes the greatest increase in the production of interferon and the greatest output of tumor necrosis factor (TNF) and interleukin 2. The production of interleukin 2 launches an entire cascade of subsequent immunological reactions.

VACCINATION OR OZONE

It was the work of Louis Pasteur, Edward Jenner, Rudolph Virchow, Robert Koch, Paul Ehrlich and Emil von Behring that brought about the theory of wide-spread vaccination, based upon the idea of producing antibodies in the blood to 'help out' the body's immune system to identify and attack 'invading germs'. Through the work of Antoine Bechamp, William F. Koch, Royal Rife, Gunther Enderlein, Carl Edward Rosenow, Otto Warburg and Gaston Naessens, the original assumptions underlying this theory regarding the body's immune system have now been shown to be erroneous.

The so-called 'bad' bacteria and viruses that modern medicine fights with its huge arsenal of pharmaceutical drugs are in reality the germs of life. These germs of life live in symbiosis with the nutritive medium that constitutes our body, allowing it to be built up and later decomposed, to be metamorphosed and recreated. These germs are pleiomorphic shape shifters who are controlled by the medium in which they live. Germs are not something separate, isolated, unfriendly and coming from without, but are rather the foundation for all life. Without germs, there is no life. Their number is infinite. Their function is varied. Germs can change shape, join together, separate again and return to their primordial condition. Viruses, bacteria and fungi are various developmental forms of germs. The nutritive medium on which the germs thrive determines the type of development they will undergo.

Early in this century, Dr. Carl Edward Rosenow of the Mayo Biological Laboratories began a series of experiments in which he took distinctive bacterial strains from a number of disease sources and placed them in one culture of uniform media. In time, the distinctive strains all changed and became one uniform class. By repeatedly changing cultures, he could individually modify bacterial strains, making harmless ones 'pathogenic', and in turn reverse the process. He concluded that the critical factor controlling the nature of the bacteria was the food and environment they lived on. These discoveries were first published in 1914 in the Journal of Infectious Diseases.

Rosenow's work was corroborated and expanded upon about two decades later by Royal R. Rife, inventor of the unique Universal Microscope, with a resolution of 150,000 power. This precision instrument made live bacteria and viruses visible. Rife showed that by altering the environment and food supply, friendly bacteria, such as colon bacillus, could be converted into the 'pathogenic' bacteria known as typhoid. Rife was able to observe that the viral agent associated with certain forms of cancer could in time be modified into harmless bacillus coli, and the process reversed. Rife stated that it was the unbalanced cell metabolism of the human body that in actuality produced the disease. He believed that if the human body was perfectly balanced, it was susceptible to no disease.

This work closely paralleled Alexis Carrel's earlier research at the Rockefeller Institute where he was able to control the rates and levels of infectious disease mortality among mice by altering the diet.

Researcher Rene Dubos reaffirmed these findings and suggested that virulence is an ecological problem: that is, a problem of the state of internal cleanliness.

It is known that children who cannot produce antibodies in their blood (agammaglobulinemia) nevertheless recover from diseases such as measles and still have long-term immunity. People with no antibodies have been found who are extremely resistant to diseases, while other people have developed diseases to which they already had high levels of antibodies.

Official U.S. military records show that highly vaccinated personnel manifest a mortality rate from diphtheria four times higher than of unvaccinated civilians.

It is now clear that the body needs no 'help' of the sort provided by vaccination; that antibodies in the blood stream are not required to protect the body; and that vaccination can cause immune suppression, permanent nervous system damage, and growth stunting. There is also strong evidence that vaccination can actually cause the diseases it was meant to prevent. This view has gained support from the writing of a report commissioned by the Canadian International Development Agency (CIDA) from Dr. Raymond Obomsawin in 1992.

In his detailed report, Dr. Obomsawin found that the idea of induced immunity was an illusion founded on:

1. discredited scientific theories
2. the refusal to examine contrary data the lack of proper follow up assessment of immunized children; and
3. poor statistical methods.

The positive impact of vaccination on public health has never, repeat NEVER, been substantiated in any unbiased study. Vaccinated people have repeatedly fallen ill to the disease they were supposedly vaccinated against, and epidemics are statistically MORE numerous in more widely vaccinated groups (studies in Gambia, Brazil and Taiwan).

Estimates by 'experts' on the degree and severity of adverse reactions have been woefully wrong, and serious damage and even fatalities have gone unreported, preventing a true assessment of the value of vaccination.

Repeatedly, statistics and reports have been manipulated in an attempt to show the effectiveness of vaccination. The best known case involves the famous Salk polio vaccine. This massive program is held up as a shining example of the effectiveness of vaccination, yet the statistical evidence shows that polio was on its natural cyclic downturn at the time of introduction of the vaccine in 1956. In one of the rare double blind tests ever done on a vaccine, the group receiving it had 200 cases of polio reported, while the control group had none. Polio disappeared in Europe in the mid-Fifties about the same time as in America, yet there was no program of mass-vaccination there.

Some scientists are now postulating that full vaccination irreparably weakens the child's immune system. These same scientists theorize that mass vaccination is responsible for the widespread escalation of auto-immune, degenerative and allergic conditions amongst those subjected to vaccination as children. A further disturbing trend is the increasing coercion placed upon parents to force them to have their children subjected to this massive invasion of their bodies. The weight of state sanctions against parents is unconscionable, especially when the true dangers of vaccination have now been laid bare in this report.

Now that we know that vaccination offers no protection against disease we are left with the question of what causes disease, how to prevent and how to treat it.

The Cause of Disease

The human body is 2/3 water. If toxins are allowed to build up in the system, the water gets 'dirty'. If the blood pH varies up or down from 7.4, then the beneficial microbes that are necessary in the body begin to change their form, and disease results.

To maintain a clean system, it is necessary to have a proper diet, one that produces a blood pH that is neither too alkaline (bacteria problems) or too acid (cancer problems). And it is necessary to have sufficient oxygen in the system to allow cellular respiration to be efficient and allow complete oxidation, preventing the production of carbon monoxide which the body cannot easily expel.

Each cell burns sugar (carbohydrates) in oxygen to make its fuel ATP. The carbon-hydrogen bond is cleaved, and oxygen bonds with the hydrogen, forming water (H₂O) and carbon dioxide (CO₂). If

there is insufficient oxygen available, carbon monoxide (CO) is formed instead, excessive lactic acid is formed and the blood is made more acid. If this oxygen deprivation (hypoxia) continues long enough, the cell will no longer be able to sustain the process of oxidation and it will be forced to ferment its sugar anaerobically. This is the first critical step to the development of cancer.

Circulation of clean, oxygen-carrying blood is a basic requirement for optimum health, and this can be achieved by bringing ozone into the body. The least expensive way of doing that would be to live on a mountain far from the cities and breathe deeply -- the recipe for an Eastern master. Failing that, we can use an ozone generator to create ozone from pure oxygen and bring that into the body in any one of a dozen ways in order to oxidize toxins and oxygenate the cells. Ozone works at the basic level of all the important bodily functions - respiration, digestion, assimilation, elimination and immunity. And this is the answer to the question of what we substitute for the worthless and dangerous vaccination programs.

If people were to have reliable ozone generators in their homes, they could purify their water, their air and their bodies. If adequate nutrition and sanitation were maintained, diseases of all types could be prevented. The role of the hospital would be reduced to an extension of the emergency room for accident victims. The role of the pharmaceutical company with its noxious potions would disappear, and the level of general health would rise to new heights.

INFECTION THEORIES CONTRASTED

PASTEUR GERM THEORY

1. Disease arises from micro-organisms originating outside the body.
2. Micro-organisms should be guarded against and destroyed to prevent disease.
3. The appearance and function of specific micro-organisms is constant.
4. Every disease is associated with a particular micro-organism.
5. Micro-organisms are primary causal agents.
6. Disease is inevitable and can 'strike' anyone at any time.
7. To prevent and cure diseases, it is necessary to 'build defenses' and to destroy pathogens.

BECHAMP TOXICITY THEORY

1. The susceptibility to disease arises from conditions within the body.
2. Micro-organisms are beneficial and life-sustaining if the body is kept clean of toxins
3. The appearance and function of specific micro-organisms changes when the host organism is injured, either mechanically, biochemically, or emotionally.
4. Every disease is associated with a particular condition of toxic buildup.
5. Micro-organisms become associated with disease only when the cells become toxified.
6. Disease arises from conditions of increased toxicity.
7. Preventing or curing disease consists of cleaning toxicity harmlessly.

FLAX OIL AND OXYGEN THERAPIES

The concept of increasing blood levels of oxygen by ozone and Homozon and hydrogen peroxide has great merit. However, getting an increase of oxygen does not guarantee an increase of oxygen on the cellular level where it is needed most for cancer treatments and other disorders.

An increase in cellular utilization oxygen can be achieved by increasing dietary Omega-3 oils. Flax oil is nature's richest source of Omega-3 oil containing nearly 60%. These Omega-3 oils are incorporated into each cell membrane as a building block. There they play the important role of attracting oxygen out of the blood to be utilized by the cell. This effect is a polar electrical attraction. It is the same reason flax oil is used in fast-drying paints because it attracts oxygen.

Two to three teaspoons of flax oil each day will meet your daily needs. Flax oil naturally contains the free radical scavengers vitamin E and beta carotene which are important factors in any healing process. Flax oil also benefits the cardiovascular system, skin problems and inflammatory conditions such as arthritis, colitis, and even congestive heart failure. Flax oil is a wonderful food but should never be cooked. It can be put on potatoes, vegetables and soups in place of butter or on salads as a dressing.

One must avoid margarine, hydrogenated fats, refined oils and heated oils as these contain harmful trans-fats which interfere with Omega-3 absorption and oxygen utilization.

The famous Budwig anti-cancer diet has as its cornerstone daily servings of flax oil and low fat cottage cheese. Soft-boiled or raw eggs are good substitutes for cottage cheese, also providing sulphur bound to protein.

Ozone Benefits for Athletes

1. Increases tissue oxygenation
2. Increases production of ATP, resulting in more energy and faster recovery
3. Delays the onset of anerobic fermentation of sugar in the cell, reducing lactic acid buildup
4. Oxidizes lactic acid, helping prevent sore muscles
5. Reduces swelling, bruising, and pain from injuries and speeds healing
6. Prevents and treats colds and flu and builds up immunity
7. Eliminates need for antibiotics, protecting intestinal flora
8. Increases hormone production to optimum levels, eliminating need for artificial steroids

FREE RADICALS

Recently, there has been wide dissemination of information about the purported dangers of free radicals, which are being blamed for all the ills that mankind is subject to, from aging to heart attacks to cancer.

Free radicals are atoms with unpaired electrons, a natural occurrence in biochemical reactions. There could be no chemical reactions and thus no life without free radicals. The properties of free radicals vary widely. Some are toxic to all living cells, others only to the most vulnerable cells. Singlet oxygen, O₁ is a highly reactive, beneficial free radical that acts as a scavenger of other harmful free radicals.

The oxygen combines with some of them to render them harmless, thereby protecting cells from damage. Healthy cells produce enzymes that protect them from oxidation. These enzymes are glutathione peroxidase, super-oxide dismutase, catalase, and reductase. Bacteria and viruses have no such enzyme protection and are therefore oxidized. By this elegant mechanism, ozone distinguishes between friends and foes and attacks only toxins, pathogens, and cells that have been damaged, weakened and infected.

The anti-oxidant products are gaining in popularity as nutritional supplements due to vigorous promotion. They are really free radical scavengers and enzyme enhancers. They have been shown to help protect marginally healthy cells from free radical damage. Superoxide dismutase in particular has helped reduce a variety of disorders; normally it is among the body's most plentiful enzymes. Prolonged use of supplementary enzymes could tend to atrophy the body's ability to make these enzymes. In any case, it does not address the cause of the problem: oxygen starvation at the cellular level, which causes the cells to be too weak to make the enzymes that protect them; and toxins which prevent the free radical scavenging enzymes from doing their job.

The psychological consequence of attempting to convince people that their bodies are under constant attack is detrimental to good health. The limbic system, or midbrain, controls both the emotions and the immune system. We must never engender fear with terrorism regarding health, as is so often done by the media with their periodic waves of 'carcinogen panic' and 'free radical scares'. As Dr. Warburg stated clearly in 1966, this approach is detrimental to public health.

Medical ozone is completely safe and non-toxic to humans when generated by proper non-contaminating equipment and administered with proper protocols. As Prof. Halliwell has written, there has never been any proof that ozone causes free radical damage to the body. It has been shown to be completely safe even when a dosage many times greater than the proposed human dosage is administered.

Ozone therapy may produce temporary discomfort (as when it induces the desirable healing crisis), but never permanent harm. 125 years of usage on millions of people have proven this.

Doubt Cast on Free Radical Theory

BBC News; Thursday, 26 February, 2004

Scientists have questioned a widely accepted theory for a cause of diseases such as cancer and arthritis. Many experts believe that molecules called free radicals, produced when the body fights infection, inflict damage on the body's tissues. Drugs have been developed to mop up these excess amounts of the molecules, and thus prevent damage and disease.

But research by University College London, published in Nature, suggests the theory may be incorrect. The researchers say their findings may have profound implications for the way conditions linked to free radicals are treated.

The theory holds that the molecules are capable of such widespread tissue damage that they may be a contributory factor in a wide range of disease. These include not only cancer and arthritis, but also damage to the blood vessels that can cause heart disease.

As a result the pharmaceutical industry has, since the 1970s, sought to develop antioxidant drugs that can either stop the production of free radicals, or mop them up once they have been created to

prevent them causing tissue damage. Many vitamins, notably vitamin E and C, as well as other natural substances are regarded as healthy because they attack free radicals.

However, the UCL team say their research disproves the evidence on which the theory was first based. Researcher Dr. Tony Segal said: "White blood cells produce oxygen free radicals, and the process by which they do so is essential for the efficient killing of microbes. People in whom this process is defective are prone to severe, chronic and often fatal infections. This fact has led to the presumption that the oxygen free radicals themselves are highly toxic, and that if they can kill organisms as tough as bacteria and fungi they can also damage human tissues. However, our work shows that the basic theory underlying the toxicity of oxygen radicals is flawed."

The researchers discovered that it is not free radicals that give white blood cells their destructive power, but enzymes which effectively digest foreign invaders. They discovered that production of these enzymes is triggered by the flow of the mineral potassium within the cell. When this flow was blocked, using a chemical derived from scorpion venom, the cells were unable to kill off foreign invaders.

This, they postulate, shows that free radicals are by no means the toxic particles that had been assumed. "All the theories relating to their causation of disease by oxygen free radicals, and the therapeutic value of antioxidants must, at the very least, be re-evaluated", said Dr. Segal.

Free Radicals And The Wholeness Of The Organism

By Roger Taylor PhD

Today we know a great deal about the living world: the myriad beautiful forms of animals and plants, and how they behave and interact with each other. On the other hand, by taking them apart, we also have a compendium of knowledge on anatomy, physiology and biochemistry - now including even sequences of their genes. But between these two is a huge gap. We lack knowledge of the basic essence of life. What is it that distinguishes the living state of matter from the non-living state? Big changes have been under way for at least the last sixty years. They began with the publication in 1944 of Erwin Schrodinger's seminal little book: "What is Life?". He was among the first to suggest that the unique properties of life could only be approached through quantum physics. Although it has yet to be much recognized by mainstream biology, we now have a firm foundation for a real holistic biophysics. One which is already putting holistic medicine on a really scientific basis, and will surely give us many new insights – extending even into ecology and our relationship with the living world.

Free radicals

A free radical is any atom or molecule which has one of its valences unsatisfied. This leaves it with an unpaired electron in its outer shell. In trying to get a partner for the lone electron, free radicals react avidly with any neighbouring molecules, and so can theoretically do damage. According to much contemporary health literature therefore, free radicals are bad news, being seen as the cause of many diseases, and even as the major cause of aging. While test-tube experiments show that they can indeed damage biological molecules there is now, as we shall see, considerable evidence in support of a role for free radicals in the very basis of life.

The case for this has been powerfully argued by Professor Vladimir Voeikov, who is Professor of Biology at Lomonosov Moscow State University. He stems from a long and distinguished tradition of

biology in Russia which has been largely ignored in the West. Some of the most convincing evidence comes from his own recent experimental work. What I write here is based on his publications – and especially from an article entitled “Reactive Oxygen Species, Water, Photons and Life”. In the broad sweep of this illuminating article, he gives us a new conception of how molecules co-operate holistically to make a living being; and even a new and credible schema for the origin of life. We can see how free radicals are a key to understanding the central (but rarely acknowledged) mystery of biochemistry: how all the multitudinous chemical reactions are integrated into a unitary living being.

All biochemical processes are transactions of energy. So first we must remember that energy comes packaged as a precisely-defined unit called a quantum. The energy-content (or “size”) of a quantum is measured in electron volts, and depends on the frequency: thus a quantum of light is bigger than one of infrared or microwave. A molecule which absorbs a quantum stores the energy as some kind of higher-energy state. A light quantum has sufficient energy to push an electron out of its stable orbital into a higher energy orbital.

The molecule is then said to be in an electron-excited state (EES). But this higher energy state is unstable and, after a while, the energy is released again as a quantum of the appropriate frequency. So in the case of EES the electron jumps back again to its stable orbital, and a quantum of light energy is released. This quantum can then either be directly transferred to another molecule (where it may contribute to a chemical reaction) or it can be emitted as a photon. In turn this photon can either be absorbed by another molecule, or lost as heat.

Most biochemical reactions, as studied in the test-tube, involve transactions of an infrared quantum rather than light. This is one reason why the importance of light in the living being is still not generally recognized in the West. It is a different story in Russia, where they have benefited from the work of Alexander Gurvich – a scientist who will come in due course to be counted as one of the world’s great names in biology. As far back as the 1920’s, he discovered that dividing cells produce a very weak light radiation (now termed biophotons) which could stimulate mitosis in resting cells. Even then it was clear to Gurvich that this light constituted an information-bearing signal. This finding lent support to his field theories of biological organization.

Since then, scientists from many countries have contributed to the development of what may be called “quantum biology”. All this work is pointing to the conclusion that a living being is unified by a single quantum wave-function in the same way that an atom or molecule is. (For further reading see Mae-Wan Ho’s excellent book “The Rainbow and the Worm”). In this conception light plays a central role; and excited electrons, rather than being confined to single atoms or molecules, are understood to be de-localized and shared over large molecular ensembles, and even to the whole organism. Moreover, as the EES decay they are continually re-generated. Thus an organism normally stores a lot of light.

How is this light generated? It is here that free radicals come onto the scene. Professor Voeikov makes the critical point that none of the usual biochemical reactions is of sufficient energy to generate light. This can only be done by the reactions of energetic free radicals. All the radicals of biological significance are derived from oxygen. Principal among these are the superoxide anion radical O_2^- — and the hydroxyl radical HO^- —. In addition there is an electronic re-arrangement of molecular oxygen called singlet oxygen 1O_2 . While not a radical, this has a high reactivity, greater than superoxide anion, but less than hydroxyl. Together these are termed Reactive Oxygen Species (ROS). Also

important are certain molecules which can easily break down to become ROS – notably hydrogen peroxide H_2O_2 and ozone O_3 . All these are generated by a variety of enzymatic and non-enzymatic mechanisms which were initially thought to be confined to cells of the immune system – especially neutrophil leucocytes.

For this reason, the only function for free radicals was thought to be to kill microbes. However, these mechanisms (and there is a growing list of them) were later found to be everywhere throughout the body. The body produces large quantities of ROS all the time - indeed it is a fact that some ten to twenty percent of all the oxygen we breathe enters this pathway. Along with this, some other facts should be taken into account. The human brain uses some 20% of the oxygen we take in, and yet it has relatively few mitochondria. Since mitochondria are well-known to be the sites where oxygen is used to generate the energy molecule ATP at the end of the Krebs cycle, most of the oxygen used by the brain must represent a different type of metabolic pathway. Of further interest are observations by Erwin Bauer - another outstanding Russian biologist - in 1935. He collected data for the total oxygen consumption during its whole life of each of a great range of animal species, divided by its mean body weight.

This index, called by him the “Rubner Constant”, increases by several thousand-fold in a sequence starting with the primitive coelenterates and ending with the primates. It stands, in fact, as the only known quantitative parameter which defines higher life forms. Note especially that for *Homo sapiens* this parameter is at least ten times higher than for other primates. This finding might suggest that as more highly-developed organisms must have more complex control systems, they will need to store more light in their bodies. And for this they will need more oxygen to generate the necessary ROS which generate the photons.

Why don't ROS do more damage?

The facts just stated are completely opposite to the current prevailing view that free radicals are merely noxious errors of metabolism. That they are produced in such quantities can only mean that they have an important function. And, although free radicals can in principle do damage, there are several means by which it is almost completely avoided in vivo. One is that the radicals are produced exactly where and when they are needed, and are used immediately, so that the concentration in the body at any one time is extremely small. And then there is the fact that radicals can neutralize each other, and so any unused ROS react preferentially with each other rather than damaging biological macromolecules. Finally, a back-up defence is provided by various anti-oxidants such as vitamins C and E, and the cellular enzyme defenses of superoxide dismutase, catalase, reductase and glutathione peroxidase.

An organism is unified by its photon field

To begin to understand the main function of ROS we must again emphasize the mysterious perfection of biological organization - even of a single cell. The characteristic wholeness of an organism must have been present from the beginning; that is, long before the molecular signals, such as hormones and neurotransmitters, were evolved. Such wholeness could not have been achieved by molecular signals alone because these require time to diffuse towards their receptors. Instead it would seem to require an underlying network of essentially instantaneous communication.

This is what is now coming to be understood as a field of de-localized electrons excited by light energy – now often termed a photon field. Furthermore, as maintained by Mae-Wan Ho, for all life's processes to hang together, they must also cohere into a single complex rhythmic order, in which the fastest rhythms (and these are very fast: resonant energy transfer between molecules takes about 10-14sec) are nested into progressively slower ones, such as brain waves, heartbeats and hormonal cycles, ultimately to the slowest: the life cycle. Indeed rhythmic oscillations are a hallmark of biological organization, since they indicate coordinated behaviour amongst molecules which, in isolation from each other, would behave randomly.

It turns out that sustained oscillations, indicating self-organization, have been found in a number of processes involving ROS. Studying the output of biophotons from isolated blood, Voiekov and his colleagues have found first that this increases greatly on stimulation of ROS production with zymosan. Most remarkable was the emergence, under certain conditions, of well-marked oscillations. The regulatory role of these biophotons became obvious from the effects of reflecting them back into the blood: a low basic output was increased by back-reflection; high output was reduced. Even in some non-living materials, for example solutions of methyl glyoxal and glycine, there was both generation of ROS and release of biophotons. In such systems too, oscillations were seen to develop.

In the living organism, the light released forms only a small portion of the total light energy produced; most of it is taken up by other molecules where it serves a control function, to trigger or modulate biochemical reactions. The rhythmic release of this energy, which is capable of a wide range of frequencies, going up even to the megahertz region, is consistent with their role as pacemakers of metabolic processes. Indeed Voiekov suggests that modulations of frequency rather than amplitude may be the most important informative factor for cellular regulation. All these complex temporal patterns (which Mae-Wan Ho likens to a symphony) are also precisely localized in space. Perhaps it could be imagined as a non-material framework of three-dimensional music, to whose tune the material constituents of life rhythmically dance.

New ideas on the origin of life

The finding that ROS and biophotons can so easily be produced in simple aqueous solutions has led Voiekov to propose a revolutionary alternative to the most commonly accepted understanding of the origin of life. He draws on recent evidence for dissociation of water under very mild conditions, merely by procedures such as mechanical agitation, illumination and freeze-thawing. The products of such dissociation include hydrogen peroxide and the free radicals H— and HO— derived from non-ionic dissociation of water. These radicals may then react with nitrogen and carbon dioxide to produce amino acids and other complex organic molecules. Moreover in the presence of simple catalysts such as iron oxide, hydrogen peroxide breaks down to release oxygen. In this way it becomes plausible to consider a scenario where oxygen began to appear from the beginning, as soon as water appeared on earth. Even at this time, however, ROS and EES would also begin to appear. These would soon self-organize, and develop structures of characteristic dynamic stability which could begin to deserve the name Life.

As Professor Voiekov writes in his introduction, we are approaching a major turning point in biology where it lets go of its current basis in 19th century physics and chemistry and gains its own proper theoretical foundation. I hope this article will stimulate interest in such ideas, and also, by providing a modus operandi for the activated oxygen therapies, enhance their general acceptance in medicine."

Ozone Produced By Antibodies During Bacterial Killing

Scripps Research Institute

Date: November 11, 2002

Professor Richard A. Lerner, M.D., Associate Professor Paul Wentworth, Jr., Ph.D., and a team of investigators at The Scripps Research Institute (TSRI) is reporting that antibodies can destroy bacteria, playing a hitherto unknown role in immune protection. Furthermore, the team found that when antibodies do this, they appear to produce the reactive gas ozone.

"Ozone has never been considered a part of biology before," says Lerner, who is Lita Annenberg Hazen Professor of Immunochemistry and holds the Cecil H. and Ida M. Green Chair in Chemistry at TSRI. The report will appear in an upcoming issue of the journal *Science*.

The ozone may be part of a previously unrecognized killing mechanism that would enhance the defensive role of antibodies, allowing them to participate directly. Previously, antibodies were believed only to signal an immune response.

Also called immunoglobulins, antibodies are secreted proteins produced by immune cells that are designed to recognize a wide range of foreign pathogens. After a bacterium, virus, or other pathogen enters the bloodstream, antibodies target antigens - proteins, fat molecules, and other pieces of the pathogen - specific to that foreign invader. These antibodies then alert the immune system to the presence of the invaders and attract lethal "effector" immune cells to the site of infection.

For the last hundred years, immunologists have firmly held that the role of antibodies was solely to recognize pathogens and signal the immune system to make an immune response. The conventional wisdom was that the dirty work of killing the pathogens was to be left to other parts of the immune system.

Now, Lerner, Wentworth and their colleagues have demonstrated that antibodies also have the ability to kill bacteria. This suggests that rather than simply recognizing foreign antigens and then activating other parts of the immune system to the site of infection, the antibodies may further enhance the immune response by directly killing some of the bacteria themselves.

Antibodies do this by producing the oxidant hydrogen peroxide. Hydrogen peroxide is lethal to bacterial cells because it pokes holes in their cell walls (cell lysis), bursting the cells and killing them.

In the *Science* paper, the TSRI team reports the effective killing of *E. coli* bacteria through hydrogen peroxide production by antibodies specific for that bacteria.

Certainly the most surprising result that Lerner, Wentworth, and their colleagues found was that antibodies appear to also make ozone, which they detected through its chemical signature. No other known molecule has the same chemical signature. Never before has ozone been detected in biology.

All antibodies have the ability to produce hydrogen peroxide, but they need to first have available a molecule known as "singlet" oxygen - a highly reactive oxygen species - to use as a substrate.

Singlet oxygen is an electronically excited form of oxygen that forms spontaneously during normal metabolic processes or when oxygen is subjected to visible or ultraviolet light in the presence of a sensitizer. "Phagocytic" innate immune cells, like neutrophils, also produce singlet oxygen and are the most likely source of the substrate for antibodies, since during an immune response, antibodies will recruit neutrophils and other immune cells to the site of an infection.

Once there, the neutrophils will engulf and destroy bacteria and other pathogens by blasting them with singlet oxygen and other oxidative molecules. The antibodies reduce singlet oxygen by combining it with water to produce hydrogen peroxide, producing ozone as well.

Immunology, An introduction - Second Edition. Lan R. Tizard. Saunders Publishing. "Respiratory Burst"
 "Of more importance in protecting animals are the neutrophil's oxidative bacteriacidal mechanisms."

Immunological Diseases - Forth Edition Max Sampler, M. D.; Little, Brown & Co. "Oxygen is required for optimal microbicidal activity of phagocytes."

"The superoxide system is toxic to many micro organisms including: bacteria, fungi, viruses, mycoplasma, Chlamydia, leishmania, trypanosoma, schistosoma, and can inactivate soluble mediators and chemo-attractants (cytokines and interleukins). The peroxidase system can stimulate certain cells to release serotonin and prostaglandins. Thus the system has a physiological role as well as a microbicidal role."

New England Journal of Medicine Vol. 298-#12 "Oxygen Dependent Microbial Killing by Phagocytes."

"The respiratory burst describes a metabolic pathway whose function is to produce a group of highly reactive microbicidal agents by the partial reduction of oxygen. The purpose of the respiratory burst is to provide a battery of oxidizing agents that can be used by the phagocytes for the destruction of microorganisms."

Hyperbaric Oxygen Therapy (HBOT) compared to Ozone Therapy

Category	HBOT	Ozone
Training required	Extensive	Minimal
Safety record	Fair	Excellent
Start up cost	High	Moderate to high
Operating cost	Moderate	Very low
Efficacy for :		
Viral infection	Fair	Excellent
Bacterial infection	Good	Excellent
Cancer	Poor	Excellent
Cerebral palsy	Excellent	Fair
Claustrophobia	NO	Excellent
COPD	NO	Good

Crush injuries	Excellent	Fair
Diabetic leg	Excellent	Excellent
Diabetes	NO (if taking insulin)	Excellent
Epilepsy	NO	Excellent
Heart attack	Good	Excellent
Oxygenation	Excellent	Excellent
Oxidation	Good	Excellent
Pregnancy	NO	Excellent (no sauna)
Seizures	NO	Excellent
Sinusitis (colds, etc.)	NO	Excellent
Stress relief	Fair	Excellent
Stroke	Excellent	Excellent
Toxin removal	Fair	Excellent
Weight loss	Poor	Excellent (w/ sauna)

Ozone Has Been Used to Treat:

Acariasis	Cancer of all types	Epidermolytic keratosis
Acne	Candidiasis	Epididymitis
Acrodermatitis	Carbuncles	Epidermophytosis
Acute otitis media	Cavernous sinus thrombosis	Epstein-Barr virus
Acute vestibulopathy	Cellulitis	Erysipelas
Addison's disease	Cerebral atrophy	Erythema migrans
Adenocarcinoma	Cerebro vascular accident	Flavivirus
Adenovirus	Chagas disease	Folliculitis
AIDS	Chicken pox	Food poisoning
Alopecia	Chlamydia	Fulminant varicella
Allergies	Cholecystitis	Furuncle

ALS	Chronic pain	Gangrene
Alzheimer's disease	Chronic pulmonary disease	Genital warts
Amebiasis	Cirrhosis of the liver	Giardiasis
Amenorrhea	Coccidiomycosis	Glaucoma
Amyloidosis	Colitis	Glioma
Anal fissures	Colorado tick fever	Glomerular disease
Anemia	Conjunctivitis	Glomerulonephritis
Angina	Contact dermatitis	Goodpasture syndrome
Angioderma	Coronavirus	Gout
Ankylosing spondylitis	Crohn's disease	Grave's disease
Anthrax	Cryptococcosis	Guillane-Barre syndrome
Aphthous stomatitis	Cryptosporidiosis	Hairy leukoplakia
Arterial occlusion	Cystitis	Heart arrhythmia
Arteriosclerosis	Cytomegalovirus	Heart disease
Arthritis	Cutaneous larva migrans	Hematoma
Arthrosis	Dengue fever	Hemorrhage
Asthma	Dermatitis	Hemorrhagic fever
Atherosclerosis	Diabetes	Hemorrhoids
Athlete's foot	Diverticulitis	Hemolytic anemia
Babesiosis	Echovirus	Hepatitis of all types
Bacterial pneumonia	Eczema	Herpes of all types
Bartonellosis	Ehrlichiosis	Histoplasmosis
Basalinoma	Emphysema	HIV/HTLV
Bell palsy	Encephalitis	Hypercholesterolemia
Bornholm myalgia	Encephalomyelitis	Hypotension
Botulism	Endocarditis	Hypersensitivity
Bronchitis	Endometritis	Hyperthyroidism
Bronchial aspergillus	Endothalmitis	Huntingdon's chorea

Bronchospasm	Enteric fever	Ichthyosis
Brucellosis	Enteritis necroticans	Ileitis
Bullous pemphigus	Environmental sensitivity	Impetigo
Burkit lymphoma	Epidermoid carcinoma	Influenza

Landry syndrome	Orchitis	Sennutsu fever
Lassa fever	Osteomyelitis	Septicemia
Leishmaniasis	Osteoporosis	Shingles
Leptospirosis	Osteosarcoma	Shock
Leukemia	Otosclerosis	Sickle cell anemia
Leukoencephalopathy	Pancreatitis	Sinusitis
Leukopenia	Panniculitis	Skin burns
Listeriosis	Papillitis	Spinalioma
Lupus erythematosus	Parainfluenza	Staphylococcus
Lyme disease	Parkinson's disease	Stomatitis
Lymphogranuloma	Pediculosis	Striatonigral degen.
Lymphoid pneumonia	P.I.D.	Stroke
Lymphoma	Pemphigoid	Syphilis
Macular degeneration	Pernicious anemia	Tardive dyskinesia
Malaria	Poliomyelitis	T. cruzi
Mastoiditis	Polyarteritis	Tendinitis
Measles	Polyoma virus	Tetanus
Melanoma	Postpartum fever	Tinea versicolor
Melioidosis	Pneumocytosis	Tinnitus
Meniere's disease	Pneumonia	Thoracic zygomycosis
Meningitis	Proctitis	Thrombopenic purpura
Migraine	Prostate enlargement	Thrombophlebitis
Molloscum ecthyma	Prurigo	Thyroiditis
Mononucleosis	Psoriasis	Togavirus
Morbilloform	Pulmonary toxiplasis	Tourette's Syndrome
Mumps	Pyoderma	Toxic amblyopia
Multiple sclerosis	Rabies	Toxoplasmosis
Myalgia	Radiculoneuritis	Traveler's diarrhea
Myasthenia gravis	Relapsing fever	Trench fever
Mycobacterium	Retinitis pigmentosa	Trypanosomiasis

Myocarditis	Reynold's syndrome	Tuberculosis
Mycosis	Reynaud's disease	Tularemia
Myelitis	Rheumatism	Ulcers
Myonecrosis	Rheumatoid arthritis	Urethritis
Myositis	Rhinitis	Urticaria
Neurodermatitis	Rift Valley fever	Uterine spasm
Neutropenia colitis	Rubella	Uveitis
Ocular trachoma	Salmonella	Varicose veins
Optic neuritis	Salpingitis	Varicella pneumonia
Otitis media	Scabies	Vascular retinopathy
Oral erythema	Scleroderma	Vasculitis
Orbital cellulitis	Senile dementia	Warts
		Wegener granuloma

USING OZONE IN THE HOME

General procedure:

1. Plug the generator into the wall socket.
2. Connect an oxygen line from the output of the oxygen tank regulator to the input of the generator.
3. Connect silicone tubing to the output of the generator and then to the appropriate attachment
4. Open the valve on the oxygen tank and adjust the flow rate on the regulator to 1/2 liter/minute for one minute, then reduce flow rate as given below.
5. Engage the power switch on the generator.
6. When finished, turn off the generator, turn off the oxygen tank, disconnect the lines, and store in a safe place.

Drinking Water:

1. Bubble ozone through cold water using the white ceramic diffuser at 1/8 liters/minute for 5 minutes for a glass; 15 minutes per liter; one hour per gallon.
2. Add two drops of Concentrace trace mineral drops to a glass
3. Drink immediately on an empty stomach.

Rectal Insufflation:

1. Clean the bowel with an enema (ozonated water is preferable)
2. Hook up the generator as stated above, and connect the rectal catheter.
3. Set the regulator flow rate to deliver 1/32 liters/minute.
4. Lubricate the catheter, lie on your left side and insert it about 2".
5. Engage the power switch on the generator.
6. Work the abdominal area with a slow counterclockwise massage beginning at the lower left abdomen to ensure that the gas does not pool in one area.
7. When a feeling of fullness, or of cramping is felt, withdraw the catheter, shut off the generator, and close the oxygen tank valve.

Vaginal Insufflation:

1. Hook up the generator to the oxygen tank and regulator as above
2. Attach a clean, lubricated catheter
3. Set the regulator to deliver 1/32 liters/minute, and turn on the generator.
4. If there is a burning sensation, and it is too uncomfortable, stop and try again the next day.
5. After you are used to it, you may be able to run it for 30 - 45 minutes at a time.

Insertion in the Ear:

1. Hook up the generator to the oxygen tank and regulator as above.
2. Attach the white plastic ear adapter.
3. Insert the adapter carefully into the ear.
4. Set the regulator to deliver 1/32 liters/minute and engage the power.
5. Do each ear for 5 minutes. Ear draining will occur, sometimes profusely.

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