

Intranasal Light Therapy as a Natural Fit for Naturopathy

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September 30, 2010

Summary

Intranasal light therapy is a largely undiscovered natural fit with naturopathy. Exposure to natural elements such as sunlight is one of the modalities employed by naturopaths. In actual fact the body at cellular level responds to the certain wavelengths of light, notably those in the red colour. Intranasal Light Therapy (ILT) is a non-pharmacological procedure that is based on the use of light, with no known side effect. The therapy stimulates the self-healing capability of the body by restoring the circulatory system either by improving the whole blood properties. When used on a daily basis it boosts the immune system by strengthening blood properties and the blood circulatory system.

Since the earliest widely practised method of controlled blood irradiation therapy emerged in the guise of Intravenous Blood Irradiation, numerous studies have been conducted on the therapeutic effects, mainly in Russia, China, Germany and some other European countries. ILT is the latest embodiment. It gives the same therapeutic outcomes without the invasiveness and inconvenience of the original method. ILT too has its share of evidence specifically obtained through the use of ILT devices.

Explanations of the biomechanisms are based on scientific principles although the concept of unblocking Qi channels under Traditional Chinese Medicine can also be applied in explaining how the health benefits are achieved through ILT.

Visible evidence can be observed through the use of a microscope in examining the ILT effect on blood samples before and after the therapy session. It is a process that practitioners of “live blood analysis” or “hemaview” are familiar with but ILT offers scientific evidence to back up the phenomenon and the results are observable in virtually real time.

As a theoretical and evidential package, naturopath should consider ILT in its collection of natural and effective therapeutic tools.

Light for therapy

Light, especially in the form of low level (or low intensity) laser of the red or near infra red wavelengths has been found to affect the body positively. Most of the relevant scientific literature explain the effect of light at cellular level as stimulating the mitochondria to increase ATP production. This leads to biochemical and cellular changes that include such benefits as accelerated healing in chronic wounds, improvements in sports injuries and carpal tunnel syndrome, pain reduction in arthritis and neuropathies, and amelioration of damage after heart attacks, stroke, nerve injury and retinal toxicity.¹

The effects are achieved by directing the light at the relevant areas of the body with a certain dosage of energy.

As we shall see later the outcomes achieved from Intranasal Light Therapy (ILT) may be the result of these mechanisms, but they are also a factor of mechanisms related to the effect of red light on blood.

Although the vast number of published research have been based on low level laser therapy (LLLT), the scientific bases for light therapy mechanisms suggest that the key factor lies in the wavelength of the light.² Therefore a red non-laser light source of say, wavelength of 633nm would produce the same outcome as a red low level laser source of the same wavelength.

The US National Institutes of Health's (NIH) National Center for Complementary and Alternative Medicine (NCCAM) has described Light Therapy as an example of a practice based on the manipulation of "veritable forms of energy including those involving electromagnetic fields"³ This category has sometimes been labelled as "energy medicine", and Intranasal Light Therapy (ILT), the main subject of discussion here would be considered a veritable or measurable form of electromagnetic energy.

The Healing Power of Light Irradiation Therapy

Many people suffer from high blood pressure and various other disease because their blood is more viscous than normal. High viscosity of the blood is associated with red blood cells (RBC) aggregation or RBCs sticking together.⁴ See also Figure 1 as a manifestation of RBC aggregation. Eventually, elevated blood viscosity and RBC aggregation are important factors in affecting blood circulation, cardiovascular diseases and a number of diseases, as found in the cumulative work of renowned haemorheology (blood flow) researcher, Dintenfas.⁵ Studies also show that the presence of RBC aggregation is an independent risk factor for vascular occlusive (blockage) disorder⁶ and thrombosis (clotting) both in arterial and venous systems⁷. As researcher Knisely of the University of Chicago sums up: "Thus far, completely unagglutinated blood has been found only in strictly healthy animals and men. No severely ill person has yet been seen who did not have intravascular agglutination (or "aggregation") of the blood and visibly pathologic vessel walls."⁸

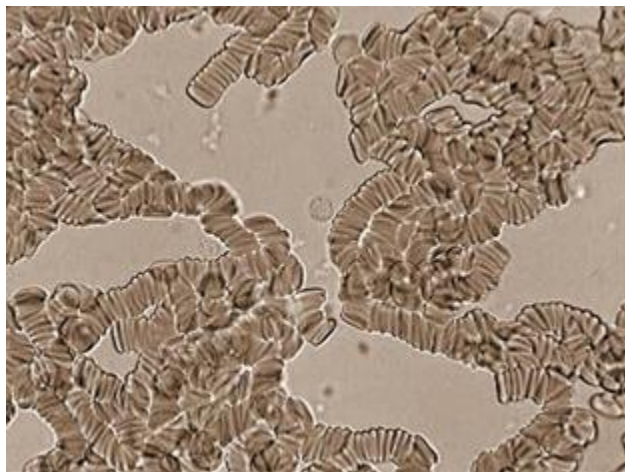


Figure 1: Red blood cell aggregation

It is found that if you allow the blood in your body to be exposed to light, specifically red light, it can neutralise red blood cell (RBC) aggregation. See Figure 2. And accordingly an increase in blood circulation.⁹ This also means the neutralization of the various diseases associated with RBC aggregation and elevated blood viscosity.

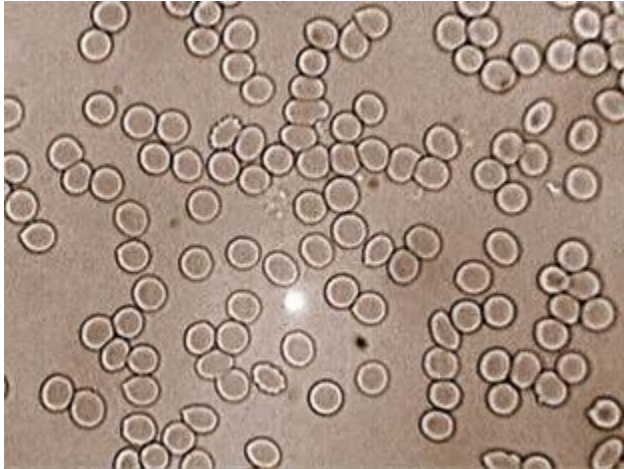


Figure 2: Red blood cell disaggregation

The resulting improvement in blood viscosity and microcirculation results in a number of beneficial medical outcomes, which will be discussed later. In the context of traditional Chinese Medicine (TCM) improvement in blood circulation is closely associated in improvement in the flow of Qi, also associated with overcoming numerous diseases.

Applying the healing light through the nose

A convenient and effective way to illuminate the blood is found to be through the nasal cavity which is rich in near-surface sensitive blood capillary networks that lie just beneath the walls. The nasal cavity is as good as anywhere else in the body if we seek to illuminate the blood and then expect the effect to be rapidly circulated throughout the body. Such a procedure of merely shining a light would also be non-invasive. These capillaries are specifically designed for rapid passage of (vaporised) fluids between the body and outside air.¹⁰

Therefore if you can direct red light into the nasal cavity in some way, you can enjoy the promising benefits of this therapy. It would be cost-free and is a viable alternative to certain pharmacological drugs. However it is not something that is easy for a layman to do. The light source will have to be small enough for comfortable insertion into the nostril to light up the nasal cavity walls where the sensitive blood vessels are, powered with the right amount of energy. There are two products that are available to do this. One is a laser based device called “RadiantLife LT”; the other is a LED (light emitting diode) device called “Qi-Light”, both by RadiantLife. See Figure 3. Both have shown to be able to achieve similar outcomes.

The process of intranasal light therapy (ILT) as designed by RadiantLife merely involves inserting a small diode into a nostril, switching on the device and allowing the light (either low level laser or normal red

light) to illuminate the nasal cavity. The device automatically turns off after 25 minutes. It is a small portable device that runs on a small AA size battery.



Figure 3: Qi-Light intranasal light therapy in use

There are other ways one can illuminate the blood. The different methods of doing this is collectively described as “Blood Irradiation Therapy”. These methods are presented in Wikipedia as “Intravenous Blood Irradiation”, “Intranasal Blood Irradiation” (or “Intranasal Light Therapy” which is the subject here) and “Transcutaneous Blood Irradiation”.

About Intravenous Blood Irradiation

Historically, the “mother” of Blood Irradiation Therapy is the intravenous (or “intravascular”) method, invariably using low level laser as the light source. Intravenous laser blood irradiation was developed experimentally by Russian researchers, Meshalkinx and Sergievskiy, and introduced into clinical practice in 1981. Originally the method was applied in the treatment of cardiovascular abnormalities.^{11 12}

This procedure involves inserting the light source into the vein through a catheter. See Figure 4. In practice patients have to turn up at centres that offer such services for a series of these treatments often up to ten times with about 30 minutes for each session for specific therapies. The process which involves the insertion of a catheter into the vein is invasive and involves some pain. With these inconveniences, the introduction of Intranasal Blood Irradiation which achieves the same efficacy is game-changing.

The earlier work cited the improvements in the rheological properties leading to improvements in microcirculation. This led to subsequent clinical use to treat cardiovascular diseases.¹³ The positive findings based on intravenous blood irradiation with low level laser are further supported by later

studies.^{14 15} Studies also more specifically support medical benefits related to LLLT blood irradiation, including the disaggregation of red blood cells, reduced blood viscosity and improved blood rheology.¹⁶ Since then many research studies have been conducted and published, especially in Russia and China. The feasibility of intravenous (called “intravascular” here) laser irradiation for therapy of cardiocirculatory diseases was first presented in the *American Heart Journal* in 1982.¹⁷

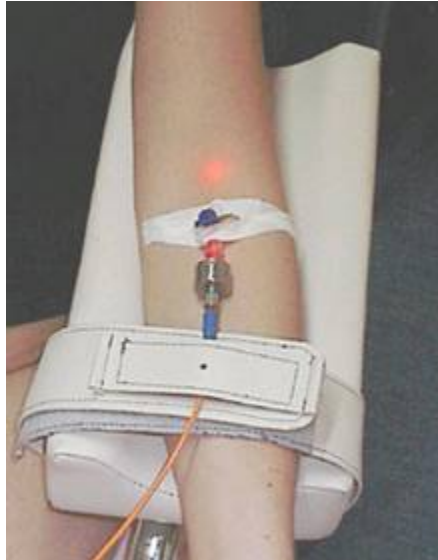


Figure 4: Intravenous blood irradiation

Intravenous blood irradiation therapy was government-certified in Germany in 2005. In the following two years, this method was established in more than 300 centers in Germany, Austria, Switzerland, Italy and Australia.¹⁸

About Transcutaneous Blood Irradiation Therapy

The other blood irradiation method is described as transcutaneous irradiation. The procedure usually involves applying light over the forearm and directed over the skin to affect blood in the vein. In theory this sounds like a good idea for subjects who do not want to be seen with a bright red device attached to the nose, or have a catheter injected into the vein. However in practice, the device is not portable, and it has to be connected to the electrical mains because of the increased power requirement of 20 times that of the intravenous blood irradiation method. The extra insulation from the added intermediary dermal layers between the light source and blood stream makes it harder to achieve consistent results notwithstanding the added power to overcome this. In the end, manufacturers who are able to design a transcutaneous blood irradiation device generally prefer an intranasal design to achieve the requisite efficacy, at lower cost and more portability. These devices are not widely available commercially or the method widely practised.

Based on comparisons between the different blood irradiation methods, particularly from the naturopathy community's desire for non-invasiveness and effectiveness, the ILT method would be the most favoured.

The Naturopathic Ideology

The ideology of naturopathy rests on the healing power of nature and avoids unnatural and invasive treatments such as pharmacological drugs, radiation and major surgery.¹⁹ The core values of the naturopathic values include the following:²⁰

1. Do no harm; provide the most effective health care available with the least risk to the patients all the time,
2. Recognize, respect and promote the self-healing power of nature inherent in each individual human being (a form of “vitalism”),
3. Identify and remove the causes of illness, rather than eliminate or suppress symptoms
4. Educate, inspire rational hope and encourage self-responsibility for health
5. Treat each person by considering all individual health factors and influences.
6. Emphasize the condition of health to promote well-being and to prevent diseases for the individual, each community and our world.

The use of the intranasal light therapy does not violate any of these principles. Instead, it strongly follows the main core values. The key to this modality is that it merely applies the relevant part of the spectrum of light, albeit in a controlled manner. It is non-invasive and it does not involve the use of drugs to achieve the efficacy. It is effective as a preventive therapy although it has also proven to be effective as therapy for diseases such as high blood pressure, diabetes, high cholesterol and other blood circulatory related diseases – see www.qi-light.com.

The visual evidence

In cases where the subject is not of optimal health, under the microscope, the red blood cells (RBC) will be seen to be coagulated (sticking together). The body systems respond to this light by stimulating an improvement in the body’s condition which results in reduced inflammation and then the curtailment of fibrinogen activity. Consequently the RBCs will be liberated from coagulation or aggregation. This then results in reduced viscosity and improved blood circulation. The visual evidence can be witnessed from blood samples observed under a microscope. See the video at <http://www.youtube.com/watch?v=nfUQNJWDFqQ>.

The relevance to “Vitalism”

Naturopaths commonly presents traditional medical concepts of “vitalism” and “vital energy fields” as an explanation for many diseases. Vitalism is a doctrine that the process of life are not explicable by the laws of physics and chemistry alone and life is in some part self-determining.²¹ In this regard, the element invoked are often described as the “vital energy”, something that TCM would call “Qi” or “Chi”.

In modern TCM, this “vital energy” is now closely related to intake of air (oxygen) and circulated through the blood circulation system, nourishing the cells in our body.²² Proponents of the vitalism concept in naturopathy will see the appropriateness of ILT as an acceptable modality supporting vitalism.

Promotion of self-healing and immunity

The healing through the use of ILT is achieved by the body itself through the improvement in the properties of blood and consequently blood circulation, much like the what acupuncture and qigong healing intend to do by unblocking Qi flow. ILT therapy does not introduce any outside substance into the body, be it natural or synthetic to achieve it.

When used on a daily basis, the blood components are kept conditioned and the circulatory system performing at improved levels. Given the evidence that include the stimulation of white blood cells and dilatation of vascular walls, the immune system of the body performs at an elevated level.

This is not “Live Blood Analysis”

In the observation procedure, ILT has some similarities to Live Blood Analysis (LBA) which is sometimes known as “hemaview”. In both cases a microscope is deployed to see the condition of the blood. The difference lies in the fact that ILT has no interest in going deeper than the visual evidence on the before-and-after effect of the therapy. LBA actively interprets the blood condition in detail and then the promoter proposes vitamins to treat the negative symptoms.

Practitioners of LBA will immediately appreciate the power of real time results with ILT.

The evidence for Intranasal Light Therapy

The vascular walls in the nasal cavity are particularly thin and sensitive, making them highly receptive to any biostimulation. The amount of blood flow to this area is considerable, and it is higher per unit of tissue than the blood flow to the brain, liver or muscle.²³ These factors make the nasal cavity highly receptive to the stimulation provided by ILT. The effect is then circulated throughout the body at in less a minute. Apart from the benefits of improved blood properties mentioned earlier based on the effect of light therapy, specific tests on ILT devices reveal the positive therapeutic outcomes below.

Most of the research on ILT have been carried out by scientists in China and published in the Chinese language. Few of these works have been translated into English but a literature review reveal that much work has been done on this modality by Chinese researchers.²⁴ It has been applied for hyperlipidemia²⁵, blood stasis syndrome of coronary heart diseases²⁶ and brain diseases²⁷, such as insomnia^{28 29}, intractable headache³⁰, Alzheimer’s disease³¹, Parkinson’s disease^{32 33 34}, post-stroke depression³⁵, aching head and face³⁶, cerebral thrombosis³⁷, acute ischemic cerebrovascular disease³⁸, migraine³⁹, brain lesion⁴⁰ and mild cognitive impairment^{41 42}.

It is theorized that illuminating the nasal cavity region with low intensity laser could correct a dysfunctional autonomic nervous system⁴³ which is associated with frequently encountered neurological disorders such as Parkinson's disease, multiple sclerosis, cerebrovascular disease, peripheral neuropathies, as well as rarer primary autonomic nervous system degeneration⁴⁴. Other studies have tested and found positive outcomes for vasomotor rhinitis⁴⁵ and microcirculation of nasal mucosa in children⁴⁶.

Further related evidence based on the intravenous method

Both ILT and the original blood irradiation therapy of the intravenous kind expose the blood in circulation to red light with the same energy output. Therefore the outcomes should be the same. For this reason, the benefit of ILT can draw on the many years of research on the outcomes produced by the older intravenous method.

The earlier work investigating the outcomes from intravenous blood irradiation therapy cited the improvements in the blood rheological properties leading to improvements in microcirculation. This led to subsequent clinical use to treat cardiovascular diseases.⁴⁷ The positive findings based on intravenous blood irradiation with low level laser therapy (LLLT) continue to be supported by later studies.^{48 49} Studies also support medical benefits related to LLLT blood irradiation causing the disaggregation of red blood cells, reduced blood viscosity and improved blood rheology.⁵⁰

Among the most notable outcomes are those that involve cardiovascular diseases covering high blood pressure, hyperlipidemia, vascular thrombosis as well as vascular related diseases such as diabetes complications. This was reviewed positively in a British medical journal in 2005 that subsequently appealed for more research to be carried out in this area of medical research.⁵¹

Going further into the common evidence, a researcher has summarised that, "it is shown that intravenous laser blood irradiation stimulates the immune response of the organism, activates erythropoiesis (creation of new erythrocytes) and improves deformability of erythrocyte membranes, has anti-hypoxic activity on tissues and general anti-toxic influence on the organism at different pathological processes. (It) is used for biostimulation, analgetic, antiallergic, immune- corrective, anti-toxic, vasodilatative, anti-arrythmic (relating to arrhythmia), antibacterial, spasmolytic, anti-inflammatory and other properties"⁵²

The mechanism of Intranasal Light Therapy

The red light used in ILT has sufficient length in its wavelength to penetrate the dermal layers and vascular walls to reach the circulating blood in the nasal cavity region. ILT systems are available in laser and non-laser based versions to achieve the necessary biomechanism. A deeper study of the biomechanisms suggests that the key to efficacy lies in the wavelength (which determines the color of light) and power combination, and not whether the light is coherent (as in lasers). Leading light therapy researcher Karu says that, "...the coherence of light is of no importance in low-power laser clinical effects" and "the primary difference between lasers and LED's is that the laser's coherent beam

produces "speckles" of relatively high power density".⁵³ The relatively incoherency of normal red light for the purpose of intranasal irradiation is compensated with added power.

The visual evidence of RBC disaggregation observed in a ILT session can be explained as follows.

The anti-inflammation theory

The cause of RBC aggregation is not fully understood but it is commonly attributed to the presence of a macro proteins such as fibrinogen and globulin.⁵⁴ Fibrinogen is the protein which is sensitive to inflammation and helps with the blood clotting function. It is a dominant factor in RBC aggregation.⁵⁵ Since inflammation is caused by an illness or disorder, one can attribute the presence of blood aggregation to the presence of an illness or a disorder. Therefore when RBC aggregation occurs, it means that the subject is at least not in perfect health.

When inflammation is reduced through ILT, the level of fibrinogen in the blood will also be reduced. As the result RBCs will be visibly disaggregated.

Literature suggests that controlled red light therapy reduces inflammation through healing and regeneration actions, amongst which include stabilizing the cellular membranes⁵⁶, enhancing ATP production and synthesis which contribute to cellular healing⁵⁷, vasodilatation (dilatation of blood vessels)⁵⁸, acceleration of leukocyte and lymphocyte activities to remove damaged cellular components and allowing for more rapid repair⁵⁹, and helps regenerate blood capillaries⁶⁰.

There is also a recent study suggesting that red light illumination (the study uses LLLT) "decreases the amount of inflammation and accelerates the wound healing process by changing the expression of genes responsible for the production of inflammatory cytokines."⁶¹

The photodissociation theory

Tests on rabbits established that haemoglobin is a primary photoacceptor absorbing low-intensity laser radiation of light of red and infra-red (IR) wavelengths. The exposure of blood to this radiation causes clearly defined changes in the IR and visible absorption spectra of the blood and RBCs. These spectral changes arise as a result of partial photodissociation (breaking down of chemical compounds with light) of haemoglobin-ligand (substance that bind biomolecules) complexes in the process of absorption of laser radiation. It is suggested that photodissociation is a primary reaction that arises in blood exposed to a low-intensity laser radiation.⁶² This result is the disaggregation of aggregated RBC.

The transient local heating hypothesis

Upon contact with blood, a substantial amount of absorbed red light energy is converted to heat, which causes a local transient increase in the temperature of absorbing chromophores (molecules responsible for their colours). This local transient heating of absorbing molecules is different from the general heating of the whole cell, tissue and organism as commonly imagined. The local transient increase in temperature causes structural changes, and trigger biochemical activity that results in the disaggregation of RBC.⁶³

The negative surface charge theory

Some researchers suggest that blood irradiation raises and restore the negative surface charge of the RBCs, rebalancing the play with electrolytes, and restoring their natural state of the RBCs repelling each other.⁶⁴

Summary of RBC aggregation/disaggregation theories

In summary, there are several theories explaining how LLLT would neutralise RBC aggregation. What matters is that a blood irradiation therapy in the form of ILT is proven to succeed in disaggregating RBC.

Conclusion

Based on evidence, Intranasal Light Therapy is an effective therapy for the broad categories of cardiovascular diseases, diabetic complications, aging related diseases, brain-related diseases as well as a number of other diseases and health disorders. It is safe, non-invasive, does not introduce any substance into the body and promotes self-healing by the patient. The devices are small, portable and do not require any expert training to use. In many ways it is a natural fit with the naturopathic principles and practices.

ILT is a modern invention based on established scientific principles and evidence that would be in line with mainstream medicine. Although there are certain theories that are also in line with TCM and other alternative medicine principles, it does not have to rely on traditional and ancient medical theories to explain its mechanisms.

For the reasons presented above, the naturopathy community should consider adopting ILT in its practice.

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