

Lowering high blood pressure naturally through intranasal light therapy

Lew Lim, Medicights Research Inc., Toronto, Canada

www.mediclights.com

Updated July 2012

Introduction

This paper discusses intranasal light therapy as an evidence-based modality for lowering high blood pressure (or hypertension). The discussion is based on scientific theories supported by published literature and relevant empirical studies. It is not intended for marketing the devices in discussion here nor is this intended to make recommendation for medical intervention.

There are commonly cited causes for high blood pressure or hypertension. These include being overweight, smoking, stress, inactivity, high sodium intake, low potassium, alcohol consumption, age and the intake of certain drugs. However MayoClinic.com states that in 90 to 95 % of the cases, there is no identifiable cause.¹ This type of high blood pressure, called essential high blood pressure or hypertension, tends to develop over many years.

High blood pressure associated with high blood viscosity and red blood cell aggregation

Notwithstanding the various cited causes (or the lack of them), the symptoms that are associated with high blood pressure are high whole blood and plasma viscosity and red blood cell (or erythrocyte) aggregation. Simpson added that the compromised deformability of red blood cells is also a contributor to high blood pressure.² As far back as 1930 Harris and McLoughlin measured blood viscosity of men with normal and high blood pressure and concluded that in many cases, blood viscosity was a causal or a contributing factor in high blood pressure.³ Similar findings were reported in 1966 by Tibbin et al who reported that both whole blood and plasma viscosity were higher in hypertensive subjects than in normotensives.⁴ In his 1976 book, Dintenfass wrote, "But approaching this problem (high blood pressure) from the viewpoint of blood rheology, one cannot dismiss the possibility that the "unknown aetiology" might comprise, or be a result of, increased blood viscosity, increased rigidity of red cells, etc."⁵

Letcher et al confirmed that blood viscosity was higher in hypertensives than in normotensives, and reported that this was due to higher levels of fibrinogen, which increased plasma viscosity.⁶ Subsequently they reported that in borderline hypertension, increased blood viscosity was associated with higher hematocrits and plasma viscosity and greater red blood cell (RBC) aggregation.⁷

More recent studies by leading blood rheology researchers such as Shu Chien are consistent in their findings that blood rheology in the form of viscosity and RBC aggregation play a significant role in high blood pressure.⁸

Despite the many published studies that identify high blood pressure with high blood viscosity and RBC aggregation, little attention has been given to developing a therapy that would result in the reversal of

blood viscosity and RBC aggregation. Simpson argued that the medical experts have been unwilling to accept this information or exhibit a lack of interest because of the premise that high blood pressure is a disease entity although the causes are not clearly identifiable and can be attributable to natural factors such as aging.⁹

Natural non-drug remedies

Various natural non-drug remedies commonly suggested are based on dietary supplements such as Coenzyme Q10, omega-3 fatty acids, garlic, ginkgo biloba extract and evening primrose oil. For years, Russia and some European countries have been using low level laser therapy (LLLT) as a successful alternative therapy to improve blood rheology that results in lowered high blood pressure.

The reason that this is not widely known in North America is probably due to the fact that it has never been cleared by the health regulators in USA and Canada. The intervention that has been used by the Russians is invasive and involves inserting a catheter intravenously into the vein. See Figure 1 below.

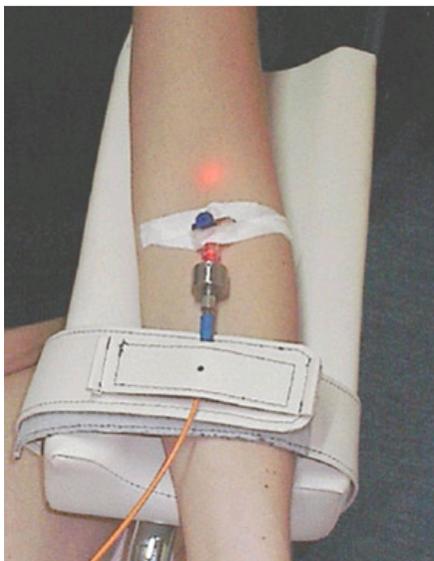


Figure 1: Original intravenous LLLT

Specific study on LLLT intravenous irradiation therapy on hypertension

A study that specifically used this method of therapy to test its effectiveness in reducing high blood pressure has found it to be effective. The method focused on reading the systolic blood pressure on 3 groups: normotensive (25 subjects with readings of less than 120 mmHg), pre-hypertensive (50 subjects with readings of 120-139 mmHg) and hypertensive stage 1 (50 subjects with readings of 140-159 mmHg). All groups were treated for 30 minutes with the intra-venous irradiation method described above deploying low level laser light with 630 nm wavelength continuously powered with 2.5 mW of energy at

the end of the intravenous fibre. Pulse rate, systolic, diastolic, and pulse pressures were measured before, after and 15 minutes after each treatment.¹⁰

The results were as follows: There was no statistical difference for the pulse rate, systolic rate, and diastolic blood pressure in the normotensive group. However, there was significant difference in the readings for the pulse rate, systolic and diastolic blood pressure in the pre-hypertensive group as well as for the hypertensive group.

In conclusion, the intravenous low level laser irradiation method as described above is effective in reducing arterial blood pressure. The authors suggested that it can be combined with anti-hypertensive drugs in pre-hypertensive and hypertensive patients as a modality of treatment. It is also a safe method for normotensive patients even though it appears not to improve the blood pressure readings.

Development of the intranasal low level laser irradiation devices

It is remarkable that after thirty years since this method of therapy was first exposed to the public by the Russians there has been little change despite the period of rapid technological changes, and yet numerous Europeans get treated with this method every year.

Based on the same principle of irradiating the blood, MedicLights developed its first prototype in 1995 but perfected in the 2000's, These intranasal light therapy devices available as "Qi-Light" and "RadiantLife" will soon to be rebranded as "Vielight: The Life Light" - <http://www.vielight.com/product-information-and-shop/>. There are different versions of the modality available: the light emitting diode (LED) and low level laser (laser). Researchers most familiar with photobiology point to the little difference between the two for most medical outcomes, amongst whom Kendric Smith could be the most vocal.¹¹ After reconciling the dosage, the main difference is in the consumption of power (or battery life). [Both versions are expected to produce similar outcomes.](#)

The improvement that this device has made to the highly invasive original Russian based intravenous method in terms of user interface and convenience is game-changing. The principle is the same: illumination of the blood stream with low level laser of similar wavelength and dosage management. The theory is that the effect of these modality parameters is similar to the intravenous method. The major difference is that the intranasal method fully leverages cutting edge semi-conductor technology to greatly miniaturize the needed equipment and the power, delivering the profound improvement in user experience. See Figures 2 and 3 below.



Figure 2: Intranasal light therapy device in use



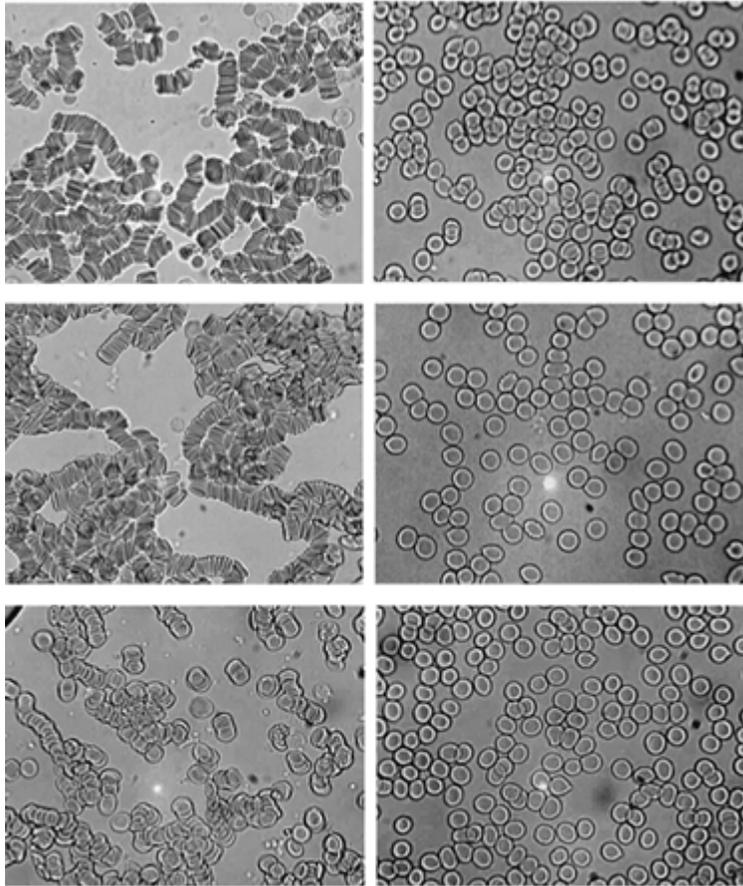
Figure 3: Intranasal light therapy device

Why the technology works – the evidence

As discussed above, a common factor among hypertension patients is high blood viscosity¹² and high RBC aggregation¹³. Blood irradiation therapy with red light reverses these abnormalities. In a landmark randomized, double-blind, placebo-controlled study, Timon CY Liu et demonstrated with statistical significance that intranasal LLLT reduces blood and plasma viscosity, and red blood cell aggregation.¹⁴ Although the tests are conducted with lasers, there are sufficient basis to assume that non-laser light of similar wavelength should achieve equivalent efficacy. This provides convincing support that intranasal light therapy can play significant role in reducing high blood pressure for most patients since blood viscosity and aggregation are key factors behind high blood pressure.

Further, as discussed earlier too, vascular walls also dilate (vasodilatation) to allow blood with these problems to maintain its rheological properties, addressing a common problem of aging.

Figure 4 below is typical of the impact that blood irradiation therapy has on RBC aggregation.



Before 25 minute treatment After 25 minute treatment

Figure 4: Typical before- and- after pictures of aggregated RBC subjected to LLLT blood irradiation treatment.

From the visual evidence, it is apparent that RBC aggregation is reversed after the blood stream is illuminated with red light, supported by the measurement in Timon Liu et al's randomized, double-blind study mentioned above.

Other studies

Other studies are not as directly relevant but provides additional support that LLLT has the effect of lowering high blood pressure. One study reports that an LLLT treatment on 42 men significantly lowered systolic, diastolic and mean arterial pressure. Total peripheral vascular resistance also decreased. A good hypotensive effect was achieved in 90.4% of the cases.¹⁵ In another study, the effects of a low level laser on the control of blood pressure were tested via energy administered via the medulla oblongata. The results from a group of 30 patients suffering from hypertension were positive in 80% of the patients.¹⁶

Conclusion

In conclusion, credible scientific bases and evidence support LLLT and red LED irradiation of the blood for lowering high blood pressure. We can achieve this with the traditional intravenous irradiation of the blood or through a more convenient modern method by illuminating the nasal cavity – the results are the same.

References

-
- ¹ MayoClinic.com: High blood pressure (hypertension): causes. Online: <http://www.mayoclinic.com/health/high-blood-pressure/DS00100/DSECTION=causes>.
 - ² Simpson L. Blood viscosity factors: The missing dimension of modern medicine. *Mumford Institute*. 199-120.
 - ³ Harris I, McLoughlin G. The viscosity of blood in high blood pressure. *Quart J Med* 1930; 23:451-64.
 - ⁴ Tibblin G, Bergentz S-E, Bjure J, et al. Haematocrit, plasma protein, plasma volume, and viscosity in early hypertensive disease. *Am Heart J* 1966; 72:72:165-72.
 - ⁵ Dintenfass L. Rheology of blood in diagnostic and preventive medicine. *Butterworth and Co., London*, 1976: pp 102-103.
 - ⁶ Letcher RL, Chien S, Pickering TG, et al. Elevated blood viscosity in patients with borderline hypertension. *Hypertension* 1983; 5:757-62.
 - ⁷ Letcher RL, Chien S, Pickering TG et al. Elevated blood viscosity in patients with borderline hypertension. *Hyertension* 1983;5:757-62.
 - ⁸ Chien S. Blood rheology in myocardial infarction and hypertension. *Biorheology* 1986;23:633-53.
 - ⁹ Simpson L, Blood viscosity factors: The missing dimension of modern medicine. *Mumford Institute*: pp 201-203.
 - ¹⁰ Mokmeli S, Bishe SH, Kohe KH, Shakhes M. Intravascular laser therapy (IVL) in pre-hypertension and hypertension conditions. *Paper presented at The World Association of Laser Therapy (WALT) conference*. 2008.
 - ¹¹ Smith KS. Laser and LED Biology. *Laser Therapy* 2010; 19:2: 72-78.
 - ¹² Ciufetti G, Schillaci G, Lombardini R, Pirro M, Vaudo G, Mannarino E. Plasma viscosity in isolated systolic hypertension: the role of pulse pressure. *American Journal of Hypertension* 2005; 18:17: 1005-1008.
 - ¹³ Lominadze D, Joshua IG, Schuschke DA. Increased erythrocyte aggregation in spontaneously hypertensive rats. *American Journal of Hypertension* 1998; 11: pp 784-789.
 - ¹⁴ Liu TCY, Cheng L, Su WJ, Zhang YW, Shi Y, Liu AH, Zhang LL, Qian ZY. Randomized, Double-Blind, and Placebo-Controlled Clinic Report of Intranasal Low-Intensity Laser Therapy on Vascular Diseases. *International Journal of Photoenergy*. 2012; ID 489713.
 - ¹⁵ Velizhanina IA, Gapon LI, Shabalina MS et al. Efficiency of low intensity radiation in essential hypertension, *Klinicheskaiia Meditsina (Mosk)*, 2001; 79:1: 41-44.
 - ¹⁶ A study cited by several websites referring to a study by Umeda, published in *Laser Therapy*, 1990; 2:2:59.