Gas Discharge Visualization Testing of Lifewave Glutathione Patches

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Abstract

This was a double blind placebo controlled randomized pilot study of 10 active and 10 control healthy subjects aged 30 and above using the sealed FDA registered homeopathic Glutathione patch made by the Lifewave Corporation and placed at the CV6 acupuncture point. When subjects were tested using the Gas Discharge Visualization device the data showed gas emission changes as analyzed by the proprietary GDV software related to solar plexus (3rd chakra) region at a level of significance of $p<.006$ in the active group vs. $p<0.111$ in the control group. These changes are in keeping with known effects of glutathione on the liver and kidneys supporting known antioxidant effects. Further, using the GDV software analysis program, the active group showed clear changes in the oscillation patterns of gas emission over a period of one hour, these findings are consistent with the non-linear dynamical theory of homeopathic remedies presented by Bell et al (2004, 2006, 2009). Control group in contrast shows norming consistent with previous GDV studies of healthy individuals. GDV data was taken at baseline, at patch application, at 30 minutes and at one hour after application. Marlowe-Crowne Social Desirability scale was administered to determine if social responses showed a tendency to support a placebo effect and all subjects answered in the average range. Tellegen Absorption scale was administered to determine if subjects were producing a high level of absorption showing a possibility of self-hypnosis and again all subjects were in moderate to low-moderate range. Global Mode Scale and Hassles and Uplift scales were administered to determine if there were any significant changes of mood with patch application and again all findings were within normal limits. No significant changes in mood presented in active or control groups. Subject self-assessment using the Visual Analogue for Focus showed an average 16% improvement in the active group and a 19% improvement in the control group. The data from the active group correlated to the GDV data on the nervous system but was distributed throughout the body so produced no significant finding. The $p<.006$ findings of impact on solar plexus region and specifically on the liver, kidney, and nervous system suggest that there may be a physiological effect of the Lifewave glutathione homeopathic patch consistent with recognized clinical effects of glutathione when placed at the CV6 acupuncture point. The observed oscillatory effects seen in the changes in gas emission in both the control and active groups, which are distinctive, support the non-linear dynamical theory of homeopathic remedy function proposed by Bell et al. A larger trial should be done to determine if significance is consistent in a larger sample size. Additional studies could be done to determine the level of antioxidant effects of the patches.

Key Words: Homeopathy, Energy Medicine, GDV, Lifewave, Glutathione

Introduction

The Lifewave Glutathione patch is a FDA registered homeopathic product. For the purposes of this study the active patches contained glutathione in the following dilutions: 10X, 30X, 1LM. This is consistent with the commercial Lifewave product. Control patches contained saline. All patches were sealed so that none of the substances in the patch actually penetrate the skin again this is consistent with the commercial product. This study attempted to discover if there are specific physiological changes produced by the application of the Lifewave Glutathione patch in a randomized controlled double blind pilot study with healthy volunteers over the age of 30 as measured by the Gas Discharge Visualization Device (GDV) and various questionnaires. Of particular interest was whether there would be changes in the levels of focus of individuals participating which would be consistent with changes in glutathione production in relation to dopamine and if there would be changes consistent with recognized anti-oxidant effects on the liver, kidney, and nervous system including the spine.

Homeopathy

While there have been a number of clinical studies using homeopathic products which have produced changes in glutathione levels in oncology clients as summarized by Mueller in 2006, little clinical research has been done on homeopathic glutathione directly beyond basic homeopathic proving's. A single study done by Nishanth (1994) sought to address the antioxidant effects of various homeopathic remedies which affected glutathione production.

There has been significant misinformation and misunderstanding over the last 100 years as to the mechanisms through which homeopathy works on and with the human body. Research done at the Penn State Materials Science Laboratory (the largest and most awarded materials science lab in the world) by Roy et al. (2005) demonstrated that there were clear specific molecular changes in the structure of the water in homeopathic remedies. Research done by

Chaplin, (2007) showed specific molecular clustering in water which was significantly different from the standard chemical understanding of H_2O. Further Chaplin, (2007(2)) showed that water may retain a level of memory related to epitaxy continuing earlier work done by Del Giudice (1994). Research done by Rao et al. (2007) using Raman Spectroscopy, showed that there were discrete differences between the molecular structures of water clusters at different potencies. Research done Chikramane et al. (2010), using TEMS microscopy demonstrated that in the case of homeopathic remedies containing metals, nanoparticles of the metals were imbedded in the molecular structure of the water even in ultra-high dilutions.

Homeopathy is classically thought to work on the "law of similar." It suggests that loading the body with a reactant which produces a similar physical result to the current illness will "wake the body up" to the fact that there is a problem and trigger a system wide response. In the non-linear dynamical theory of homeopathy introduced by Bell et al. (2004, 2006, 2010) and further characterized by Koithan at al. (2007) and Menk et al. (2010), it is suggested that a healthy body lives on the edge of chaos and is thus able to respond rapidly to changes in environmental stimuli. Disease is produced by the individual getting stuck in one order and thus not being able to respond appropriately to stimuli. As a result individuals with healthy body systems should produce oscillations in their responses to stimuli and when a homeopathic remedy is introduced into a "stuck" system it should produce a more significant stimulation and resulting pattern of oscillation should move disrupt the stuck system eventually returning the individual to a health.

Glutathione

Glutathione is a naturally produced antioxidant (Wu et al., 2004, Pressman, 2007). Found in the liver, the effects of glutathione participation are being researched in conjunction with many illnesses, for example: cataracts (Guyen et al. 2011), arthritis (Carlo & Loeser, 2003), cancer (Hamilton & Batist, 2004, Skalska et al. 2010, Shukla et al. 2010), Parkinson's disease

(Bisaglia et al. 2010, Heales et al, 2010, Garrido et al, 2010, Gardaneh et al. 2011) and liver failure (Shtukmaster et al. 2010). Recognized as an intermediary for metabolism, it is also known as gamma-Glutamylcysteineglycine. It is a protein which is composed of three amino acids. They are cysteine, glutamic acid and glycine. The monomer form of glutathione is a single molecule and it is the active form. (Uretsky, 2005) First isolated as a single protein from yeast in 1984, oral doses of glutathione do not appear to actually increase levels in the blood. Oral supplements of alpha-lipoic acid and whey protein do appear to increase intracellular levels of glutathione. (Wessner et al. 2003, Pressman, 2007)

Contraindications in oral Glutithione

At this time, based on existing standard clinical studies, some of the following side effects have been noted from taking glutathione orally: chest pain, shortness of breath, tightness in the throat and some allergic type reactions. Zinc deficiency had been noted in individuals who take long term oral medications which contain glutathione. (Zenger et al. 2004)

No adverse events or negative effects of participant use of the Lifewave glutathione patch appeared in this study.

Gas Discharge Visualization (GDV)

The GDV device was developed in the mid 1990's by Dr. Konstantin G. Korotkov, a Russian professor of Physics at the St. Petersburg Technical University in Russia. The device was developed as a way of photographing and measuring the spectrum of gas emission from the fingertips and the potential biophoton emission. When using the GDV device, the fingertip of the subject is placed on a dielectric plate. For the purposes of this study, a 10 microampere signal with a pulse duration of 1ms was passed over the plate and across the fingertip. The image generated and captured by the camera results from the movement of electrons across the

dielectric plate (assuming the finger has a positive potential) and the subsequent collision and ionization of the gas molecules surrounding the finger. The camera takes a picture of this emission, which often appears as a branch-like pattern around the finger. Each picture takes 1 second to generate, and is stored in a computer for later analysis. Pictures are taken from each finger on both hands.

Computer software analyzes the spectrum, density and fractal patterns of the discharge from each finger-tip. Additional analysis can be done by specific sections of the finger tips which have been mapped to specific organs of the body. (Appendix A: for device development bibliography)

Approved for clinical use after recommendation of the Russian Academy of Science, the device was approved by the Russian Health Authority for general clinical use without limitations in 1999. Though the device is still considered an experimental device in the US, it is in use in 20 countries and is considered a clinical and diagnostic device in most of them. The largest area of conflict in the acceptance of the device in the US appears to be that the display and analysis programs are centered on the meridian system which is in standard use in Russia and Asia and not the organ system standard used in the United States. Thus data analysis for this study was done both ways. The GDV software standard display and analysis suite was used for nerve plexus region data (chakra) and further data analysis was done looking at specific regional data by finger-tip related to specific organs.

The Meridian System

The theory of balancing the body based on the Chinese meridian system is over 3000 years old. Current information now maps the meridian system to parts of the lymphatic system. (Feinstein, 2010) The concept of the release of "Qi" or static electric overcharge, on an area of the lymphatic system is consistent with the evidence that the body has a variety of electrical-dermal potentials across its surface (Becker & Selden, 1985, Flick, 2004) and that acupuncture

points are strategic conductors of electromagnetic signals (Feinstein, 2010). The Central Vessel (CV) runs along the mid-line of the front of the body. For this study the patch was placed at CV6 (Qihai) and particular attention was paid to the corresponding point on the hands.

The National Institute of Health Consensus Statement on Acupuncture:

"Acupuncture as a therapeutic intervention is widely practiced in the United States. While there have been many studies of its potential usefulness, many of these studies provide equivocal results because of design, sample size, and other factors. The issue is further complicated by inherent difficulties in the use of appropriate controls, such as placebos and sham acupuncture groups. However, promising results have emerged, for example, showing efficacy of acupuncture in adult postoperative and chemotherapy nausea and vomiting and in postoperative dental pain. There are other situations such as addiction, stroke rehabilitation, headache, menstrual cramps, tennis elbow, fibromyalgia, myofascial pain, osteoarthritis, low back pain, carpal tunnel syndrome, and asthma, in which acupuncture may be useful as an adjunct treatment or an acceptable alternative or be included in a comprehensive management program. Further research is likely to uncover additional areas where acupuncture interventions will be useful."

Materials

The materials used for this study were glutathione patches and identical placebo patches made by the Lifewave Corporation, a Gas Discharge Visualization device, questionnaires, computer and software, printer, paper, ink, pens, clipboards, 3-hole punch, envelopes and binder. Specific descriptions of the questionnaires used in this study are below.

Construct to be Measured	Test	Description	References
Social Desirability Scale	**Marlowe-Crowne**	13 Item true/false short form that is a measure of subjects tendencies to give answers that they may perceive are desired by the interviewer and/or reflect perceived positive social norms. This variable can produce inaccurate or misleading findings unless properly controlled for in statistical analysis. Estimated completion time 2 minutes.	Reynolds et al, 1982
Mood	**Focusing Visual Analogue Scale (fVAS)**	Rates subject's "overall sense of focus at the immediate time using a one-line visual analogue scale.	Connor, in process
Spiritual and Quality of Life Factors	**Hassles and Uplift Scale Revised**	This is a 53 item scale assessing what events of daily life provide positive and negative stressors. Completion time 12 minutes	Lazarus & Folkman,1987
Current mood states	**Global Mood Scale (GMS)**	20 item 5 - factor Likert scale that is used to asses participants current mood state and 1 item 10 - factor Likert scale assign well being of participant at the current moment. Estimated completion time 6 minutes.	Denollet, 1993
Absorption and Hypnotizability	**The Tellagen Absorption Scale (Absorption)**	A 34 item, true-false questionnaire, well-validated and shown reliable, derived from Tellagen's (1982) Multidimensional Personality Questionnaire. Measures the degree to which the subject's "perceptual, motoric, imaginative, and ideational resources" can be committed to forming a "unified representation of the attentional object" (Tellagen and Atkinson, 1974, p. 274). Estimated maximum completion time of 6 minutes.	(Radtke and Stam, 1991; Dixon, et al, 1996; Finke and MacDonaldd, 1978)
Demographics	**Demographics Questionnaire**	A generalized demographics questionnaire. 2 minutes maximum completion time.	Connor, in progress.

Methods

Application for human studies permission was made to the National Foundation for Energy Healing internal review board and the study approved as NFFEH 9-18-10-01. Study recruitment was begun and subjects were recruited by email announcement, through radio

announcements and word of mouth. Flyers were also placed on public access bulletin boards. Interested persons were asked to call in to the study call number. At the time individuals called into the study number their eligibility to participate was reviewed and if they were over the age of 30 and met the inclusion/exclusion criterion they were asked to confirm that they did not have any of the following psychological/physical conditions:

1. A history of psychological disorders
2. A history of drug or alcohol abuse
3. A history of any major medical problems (epilepsy, stroke, Alzheimer's, Parkinson's, major head trauma).
4. Female subjects who are pregnant were also excluded.

If individuals met the criterion they were then scheduled to be consented with Dr. Connor. Dr. Connor then met with the subjects in person to review the consent form and consent subjects. All subjects were asked not to consume caffeine-containing drinks during the course of the experiment and were provided with water as an alternative.

This study was done as a blinded process. Two groups of patches were put together by the research administrator at the Lifewave corporation and were sent to Dr. Connor packaged as group one and group two. A research assistant in the laboratory then ran a computer randomization program which assigned patches to a subject number. Patches from group one or two were put in envelopes based on the computer assignment and a subject number was placed on the envelope. The envelopes were then placed in the packets for each subject. Dr. Connor and Dr. Maret had no knowledge of which subjects were in each group nor which group was active or control until data collection was completed and the blind was broken. All subjects were assigned a number in order of recruitment and all records on that subject were maintained under the subjects' number.

In all cases the ambient temperature of the test room was maintained at 21^{o}C. Unnecessary distractions were minimized by testing in a quiet setting. Subjects entered the laboratory and were seated comfortably for the consenting process. After consenting the subjects

were scheduled for testing. Upon arrival for testing the Telegen Absorption scale and the Focusing Visual Analogue Scale were administered.

The first GDV scan was then taken before application of the 'Glutathione' patches. The first copy of the Global Mood Scale was then filled out and the patch was applied by the subject to themselves according to the diagram which the researcher provided. In this case, the patch was applied to point CV6 (conception vessel 6 see Appendix B). After patch application the next GDV images were taken and subjects were asked to fill out another fVAS, then the Marlowe-Crowne social desirability scale and the Tellegen Absorption Spectrum were filled out by the subject. At 30 minutes after patch application another GDV measure was taken and another fVAS was filled out. A series of questions were asked using the methods described in "Homeopathic Methodology" by Todd Rowe, MD, to determine the homeopathic miasm of each subject. Then a demographics questionnaire was filled out and at one hour after application the final GDV measure, fVAS and Global Mood Scale were completed.

Results

A comparison of the results from ten active subjects (group 1) and ten controls (Group 2) were compared as follows. The individual GDV proprietary software data from the Solar Plexus Chakra (associated with the upper abdominal nerve plexi in the subjects) at the start of the study (Run 1) were compared to those at the end of the study (Run 4). The data summary is tabulated below in Table 1. An F-test (analysis of variances) was carried out between the two runs for both the active group and the control group. A significant F value of 0.00256 was found for the active group so that the data set was then analyzed with a two tailed T-test for unequal variances yielding a significant difference of between the two runs a $p= 0.0069$. In contrast, the control group showed no difference in variances (F-test = 0.2936, not significant) so a two tailed T-test with equal variances was carried out yielding a non-significant p value of 0.1109. For the control subjects, there was thus no difference between the initial and final runs using the placebo

patches while there were significant changes after one hour of wearing the glutathione patches. These changes are in keeping with known effects of glutathione on the liver and kidneys supporting known antioxidant effects.

	Group 1 (Active Patch) n =10		Group 2 (Placebo Patch) n = 10	
	Run 1	Run 4	Run 1	Run 4
Mean	0.204	0.973	0.089	0.227
Standard Deviation	0.2262	0.6965	0.1486	0.2138
Variance	0.0512	0.4851	0.0221	0.0457
F-test score	0.00256 (unequal variances)		0.2936 (equal variance)	
Two tailed T-Test score	0.0069 ** (significant differences)		0.1109 (not significant)	

Table 1: Solar Plexus GDV Data Analysis

Further, using the GDV software analysis program, the active group showed clear changes in the oscillation patterns of gas emission over a period of one hour, these findings are consistent with the non-linear dynamical theory of homeopathic remedies presented by Bell et al (2004, 2006, 2009). Control group in contrast shows norming consistent with previous GDV studies of healthy individuals. GDV data was taken at baseline, at patch application, at 30 minutes and at one hour after application.

Marlowe-Crowne Social Desirability scale was administered to determine if social responses showed a tendency to support a placebo effect and all subjects answered in the average range. Tellegen Absorption scale was administered to determine if subjects were producing a high level of absorption showing a possibility of self-hypnosis and again all subjects were in moderate to low-moderate range.

Global Mode Scale and Hassles and Uplift scales were administered to determine if there were any significant changes of mood with patch application and again all findings were within normal limits. No significant changes in mood presented in active or control groups.

Subject self-assessment using the Visual Analogue for Focus (fVAS) showed improvement in cognitive focus in both groups with an average of 16% change in the active group and 19% change in the control group. fVAS data on the changes in focus levels are supported by matched pattern of change of the nervous system in the GDV data on the active group but not to a level of significance as the change was distributed across the body and not located in a single area.

The $p<.0069$ findings of impact on solar plexus region and specifically on the liver, kidney, and nervous system suggest that there may be a physiological effect of the Lifewave glutathione homeopathic patch consistent with recognized clinical effects of glutathione when placed at the CV6 acupuncture point. Finally, there were no adverse events in this study.

Conclusion

The $p<.0069$ findings of impact on solar plexus region and specifically on the liver, kidney, and nervous system suggest that there may be a physiological effect of the Lifewave glutathione homeopathic patch consistent with recognized clinical effects of glutathione when placed at the CV6 acupuncture point. fVAS data on the changes in focus levels are supported by matched pattern of change of the nervous system in the active group but are distributed across the body so no specific significance was observed. A larger sample size may produce more specific significance in this finding. The observed oscillatory effects seen in the changes in gas emission in both the control and active groups which are distinctive support the non-linear dynamical theory of homeopathic remedy function proposed by Bell et al. A larger trial should be done to determine if significance is consistent in a larger sample size. Additional studies could be done to determine the level of antioxidant effects of the patches

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Appendix A: Studies supporting the development of the GDV device

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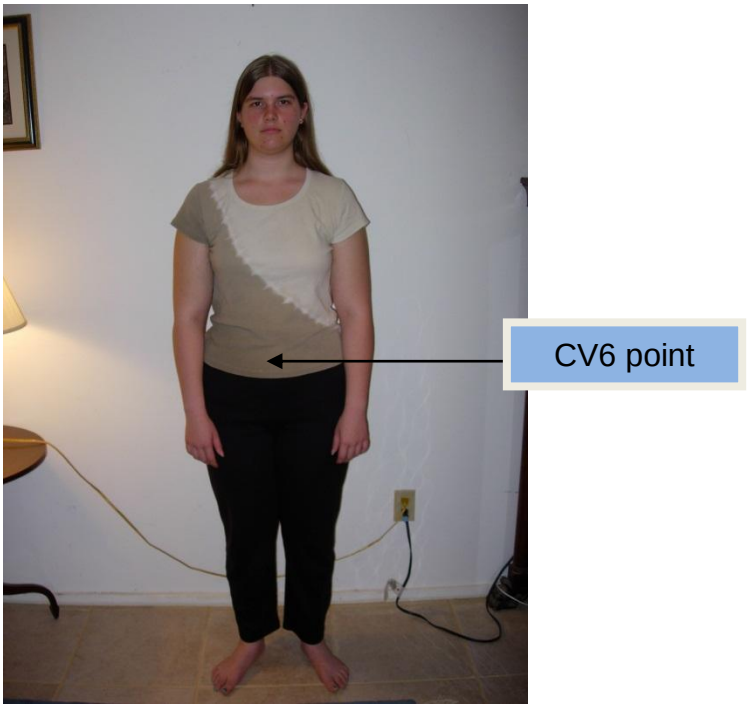
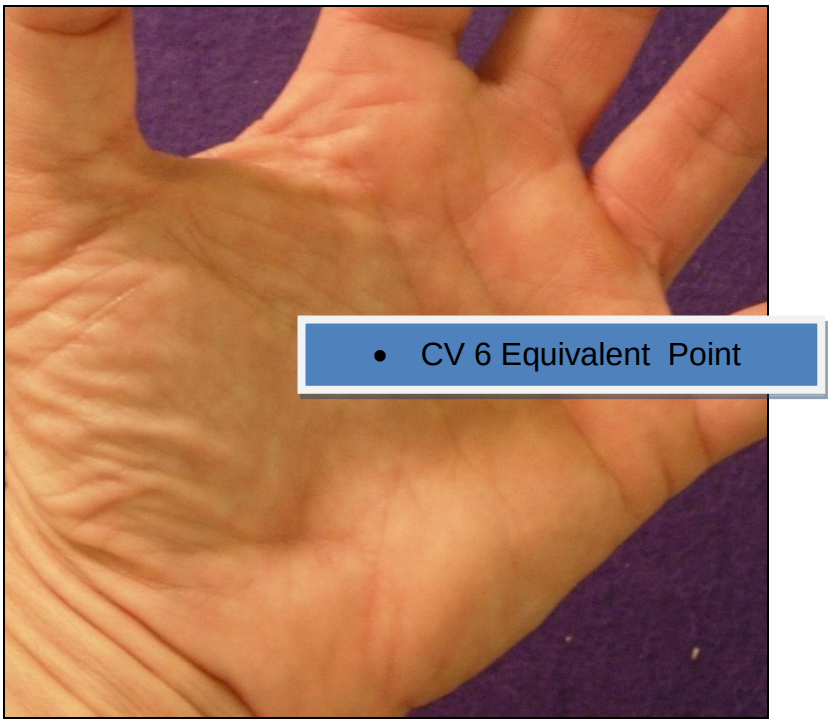
Appendix B: Diagram of CV6 point on Torso and Corresponding A6 point on the Hand



Equivalent CV6 point on the hand



Appendix C: Finger Analysis Table

Korotkov, K., “Human Energy Field”
fig.13