Original Research

PROVING THE EXISTENCE OF ELEMENTAL OXYGEN IN A LIQUID NUTRITIONAL PRODUCT ("VITAMIN O") THROUGH BLOOD GAS ANALYSES OF THERAPY/ PLACEBO-SUPPLEMENTED HUTTERITES

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ABSTRACT

Background: "Vitamin O" (a special supplemental oxygen taken in liquid form and produced through electrical-activation with saline solution from the ocean) has been periodically criticized in times past by governmental agencies and media alike for having no presumed oxygen content that could be detected by different lab analyses. Previous attempts to isolate this presumed oxygen have proven unsuccessful.

Objective: A precedent-setting study was initiated for the primary purpose of evaluating this particular nutritional for its elemental oxygen content by using an entirely different approach. A working hypothesis was developed to demonstrate that this supplement's oxygen could be detected through the medium of human blood with the assistance of blood gas technology. An experimental study was commenced in order to effectively test this theory out. The final results demonstrated that this was the most logical direction in which to go.

Design: Sixty Hutterite men and women from different colonies based in North America were recruited for this project. To be eligible, all volunteers had to have verifiable conditions of general anemia (a decrease in either hemoglobin or the number of red blood cells to below the normal level). Half of them were already taking some kind of doctor-prescribed iron supplement for their problem, while the others still remained unsupplemented. They were placed on a six-month program of special supplemented oxygen taken in liquid form and produced through electrical-activation with saline solution from the ocean, using either the test product itself or a suitable placebo (sterile saline solution of less than 5%), and divided into four major groups: (A) "Vitamin O" with an iron supplement; (B) "Vitamin O" without iron; (C) Placebo with an iron supplement; and (D) Placebo without iron.

Results: Blood gas analyses conducted on the participants' arterial blood samples showed definite **increases** in arterial blood oxygen (PaO_2), as well as elevated discharges of carbon dioxide waste matter. Older subjects appeared to respond better to the test product's therapeutic actions, than was reported from younger recipients. The inclusion of an iron supplement with the test product indicates a helpful role in how the body utilizes "Vitamin O". However, non-iron subjects also receiving test product posted higher-than-expected hemoglobin values, which suggests that the apparent blood-building action of "Vitamin O" can happen also without iron-dependency. A general stabilization of arterial blood oxygen levels following three months of steady supplementation with the test product became evident, but could change if daily intake were temporarily discontinued.

Conclusions: Previous claims for test product's elemental oxygen content have been completely verified by blood gas analysis. The sophisticated technology employed made certain of this. And unsolicited remarks by a number of study subjects only reconfirmed this fact through oral anecdotes. "Vitamin O" **does** contain oxygen!

SUBJECTS AND METHODOLOGY

Subjects

Men and women with verifiable anemia were recruited from a variety of Hutterite colonies for study. No protocol and consent forms for the study were necessary. In the religious culture of the Hutterian Brethren, the head minister and assistant minister are usually the last word of authority in most colony matters. Once the test had been fully explained to each of them in the respective colonies contacted and their permission was obtained, then it only remained to obtain the necessary cooperation from the final participants selected.

Eligible subjects were aged 9 to 83 and, with the exception of anemia, exhibited no other organic diseases of any significance. Persons without anemia were excluded, as women who became pregnant, the very young (less than 9 years old) or the very elderly (those above 83). Persons were sought after who either were already taking some type of iron supplement or had not as yet made an effort with their doctors to start using this trace mineral for their problem.

Subjects were then randomly assigned to one of four different groups identified as follows: Group A ("Vitamin O" + iron); Group B ("Vitamin O" without iron); Group C (Equivalent placebo + iron); and Group D (Equivalent placebo without iron). The study protocol demanded that subjects submit to at least two arterial blood draws before and after the test had run its course. A third preliminary sampling on six randomly chosen subjects was made about midway in the experiment.

The Hutterites are a self-contained people shunning the outside world. They are part of Anabaptist Reformation movement of the 16th Century. But unlike other Anabaptist groups such as old-order Mennonites and Amish who reject most modern conveniences outright, the Hutterites are not at all against fully embracing the numerous benefits which some types of modern technology have to offer. This is especially apparent when it comes to the operations of their large agribusiness colonies.

In an America that has pretty much abandoned its agrarian heritage, these people have stayed close to the soil for well over four centuries now and have not only adequately supported themselves from it but have also reaped huge profits through their wise farm management skills. They operate substantial farms and ranches in the western portions of America and Canada. These people share all property and income equally, there being no rich nor poor among them.

They have turned away from contemporary America more single-mindedly than even their spiritual cousins (Mennonites and Amish) have. The Hutterites are far less assimilated into the American culture than are these other two Anabaptists groups, who individually own their farms and often work for hired wages in the outside world.

In colonies of 50 to 100-plus people, the Hutterites carefully preserve their communal identities by strictly adhering to their own traditions. They avoid worldly temptations in the forms of TV, radio, motorcycles, provocative clothing, jewelry, racey literature, and so forth. However, they have had the good sense to keep those parts of modern technology which have enabled them to become the successful farmers and ranchers that they now are.

Methodology

Blood gas monitoring has been around in some form since the mid-1920's. In the mid- and late-1930's various European scientists published new ways of measuring blood plasma oxygen levels. The dropping-mercury method of measuring blood gases (mm Hg) first came into being sometime in 1942. The actual separation of blood gases themselves didn't occur, though until in the late 1940's and

early 1950's. In early October, 1954 Leland C Clark, Jr., a biochemist and physiologist invented the prototype electrode that would revolutionize clinical medicine forever.

In his own words, here is what happened: "It was late in the day on October 4, 1954. I shall never forget this day. It was then that I assembled some glass, platinum, and silver wire, a drop of potassium chloride solution, and a bit of polyethylene film to see if it would work as an oxygen electrode. The circuit was a flashlight battery, two resistors, and a string spotlight galvanometer from an old Evelyn colorimeter. The total cost of the electrode and circuit was just under a dollar.

"First there was current which settled at a few microamperers. Next, I squirted oxygen at the tip of the electrode and the galvanometer spot took off. It returned to the air current when the oxygen stream was removed. I squirted gas from a nearby Bunsen burner, and the current decreased rapidly to near zero. Although I had hoped it might work, I was really surprised when it did. I have only had this feeling of elation a few times since then."

More than any other single invention, Clark's electrode led to the ubiquitous blood gas measurement. When Clark finally managed to work out the bugs and disclosed his polyethylene-covered oxygen electrode at around 5:00 p.m. on April 18, 1956, in Convention Hall, Atlantic City, New Jersey, the meeting broke up so that everyone could inspect his wonderful achievement. No one doubted that this was a historic turning point for respiratory physiology. Nor did they anticipate, however, the explosion of uses of this amazing oxygen electrode in clinical medicine. It would be used, first and foremost, to monitor gaseous oxygen, to measure blood PaO_2 in order to determine blood oxygen content, and to study hemoglobin dissociation curves. In addition, it would help in transcutaneous monitoring of oxygen in premature infants and would have a myriad of research uses eventually in cell culture and molecular genetics. Use of Clark's incredible electrode would also carry over into the flood industry, to wine and beer production, to aviation and space flight, to soil chemistry, and even to sewage management, of all things! On April 23, 1985, in Anaheim, California, Leland Clark and two associates were honored at a special 30th anniversary celebration of the invention of blood gas electrodes at the Respiration Dinner of the Federation of American Societies for Experimental Biology (FASEB).

The introduction of Clark's invention dramatically changed the way physiologists were then monitoring blood plasma oxygen. The old way required rapid stirring of blood solutions to obtain readings similar to the actual oxygen tension (PaO_2) as seen in a gas phase in equilibrium with a liquid. But the possibility of directly measuring blood PaO_2 and even tissue PaO_2 generated enormous interest among respiratory physiologists.

The first blood gas electrode system containing all three electrodes (pH, $PaCO_2$ and PaO_2) was designed and built by Severinghaus and Bradley at the Cardiovascular Research Institute of the University of California Medical School in San Francisco in 1958 – 1959. This apparatus is now part of the Anesthesia Exhibit at the National Museum of American History, which is part of the Smithsonian Institution in Washington, D.C. Calibration problems were eventually resolved with the invention of Clark-type gas phase oxygen electrodes, which have become a standard component not only of blood gas analysis machines but also of modern anesthesia machine, the incubator, the ventilatory apparatus, and the aviator's oxygen mask. Other research physiologists and anesthesiologists made their own valuable contributions to blood gas analysis and standardization over the course of time. All of these noble efforts, both great and small, has made oxygen measurement, as it should be, one of the biggest fields in modern physiology.

Blood gas machines have evolved from tedious manually operated instruments to highly automated machines of considerable complexity and sophistication. Today virtually every acute care hospital in America provides rapid and automated blood gas testing on a 24/7/365 basis, if necessary. One of the most important areas undergoing rapid change right now is that of blood gas quality

activity present an especially considerable array of choices. There are many new arterial blood sample collection devices and new reagents for calibration.

As a result, all phases of this testing methodology – blood drawing, rapid and chilled lab delivery, machine calibration, sample insertion, cleaning, value measuring, and data interpretation – are unbelievably accurate because of state-of-the-art technology and the continual updating of the knowledge required by those technologists involved in such unique monitoring.

Since the integrity of test participants' vessels had to be violated to obtain the needed blood samples, those medical researchers involved with this study were concerned with three significant problems normally associated with such as invasion: bleeding, vessel obstruction, and infection. Blood gas analysis requires arterial samples because only the right and left ventricles contain thoroughly mixed blood that has returned from the capillary beds where respiration has occurred, having passed through the liver portal to pick up any supplemented "Vitamin O" or its equivalent placebo.

The arteries are conduits in which essentially no gas exchange occurs; therefore, an aterial sample is presumed to have the same blood pH, $PaCO_2$ (partial pressure of carbon dioxide) and PaO_2 (partial pressure of oxygen in arterial blood; or, arterial oxygen tension) as already exist in the corresponding ventricle. The criteria for selecting a site and technique for obtaining arterial blood samples should always be based on safety, accessibility and test subject comfort.

The radial artery at the wrist is the best site for obtaining an arterial blood sample for several reasons. First, it is superficially located and relatively easy to palpate and stabilize. Secondly, collateral circulation via the ulnar artery is usually excellent. Thirdly, the artery isn't adjacent to large veins. And finally, a probing needle can be relatively pain free if the periosteum of surrounding bone is avoided. The superficial palmer arch provides the major blood flow to the fingers and is derived primarily from the ulnar artery. The radial artery supplies the smaller deep palmer and dorsal arch of the hand.

A simple, clinically reliable maneuver for assessing collateral circulation in test subjects' hands prior to radial artery puncturing was employed. Participants were asked to form tightly closed fists to force most of the blood from their hands. Pressure was then applied to the wrist to compress and obstruct both the radial and ulnar arteries. The obstructing pressure was removed from the ulnar artery while the radial artery remained obstructed. Flushing the subjects' palms, fingers, and thumbs within 10 seconds documented that their ulnar arteries were capable of supplying the entire hand while their radial arteries were occluded. Such a maneuver indicated that radial artery puncturing of the sixty study subjects would not result in inadequate blood flow to the hand.

The technique for radial artery puncture was explained to each participant. After the skin had been examined for rash or other abnormalities that might have eliminated prospective draw sites, palpations of the radial and ulnar arteries were done. Each participant was positioned so that the hand and arm positions wouldn't be uncomfortable. A rolled or folded towel was placed beneath the wrist to help maintain wrist hyperextension. Each intended puncture site was cleansed with 70% isopropyl alcohol.

Those performing such a procedure wore latex gloves. Use of local anesthesia was deemed unnecessary since nearly all punctures were accomplished correctly on the first attempt. However, in the few cases where they were not and multiple attempts were required, cold packs were promptly placed over the puncture sites and subjects given cold drinks of some kind to provide immediate relief from pain. All sampling was conducted on several different Sundays when test subjects were in a resting mode.

Use of 21-gauge needles was preferred over the smaller-gauge kinds so as not to invoke higher arterial pressures to pulsate blood into syringes. Subjects' arteries were palpated with one hand of the blood drawers, while in the other they held a properly prepared syringe and needle. The angle of entry was similar to that of grasping a pencil or at a 45-degree tilt. Slow advancement yielded blood

pulsating into syringes. Two of four milliliters of blood was taken with each sampling. It was seldom necessary to aspirate syringes with 21-gauge needles. Pressure was applied to the puncture sites for up to 2 minutes or until any small bleeding had ceased.

Since blood is living tissue, there continues to be oxygen consumption and carbon dioxide production, even after the blood has been taken up into a syringe. This is why extraordinary precautions were taken to have all blood gas syringes properly cooled in portable refrigerated units made especially for this purpose. As a result the temperature of the drawn samples fell immediately to about 4 degrees Centigrade which tends to minimize the oxygen consumption and carbon dioxide production.

And by reducing the temperature of the blood samples, we also managed to reduce the metabolic rate of the blood cells themselves. In fact, by promptly refrigerating our collected samples as we did, automatically decreased the metabolic rate to such an extent that the samples underwent minimal change over several hours. As a general rule, arterial blood samples should be cooled as quickly as possible if it isn't feasible to have them analyzed within the hour.

Extraordinary steps were taken to have all blood samples rapidly delivered to the nearest regional hospitals which have pulmonary labs and the latest blood gas machines on which these samples could be immediately analyzed. A chartered helicopter was employed in a few instances for quicker delivery from more distant colonies.

RESULTS

Sixty Hutterites with verifiable anemia (a decrease in either hemoglobin or the number of red blood cells to below the normal level) were selected from a number of different colonies and enrolled in a six-month study project. The classic signs of this mostly iron-deficient problem were manifested in many of the following cluster of symptoms: fatigue, pale skin, headaches, periodic dizziness or the tendency to fall asleep too easily, an irregular heartbeat or palpitations, and/or shortage of breath after moderate physical exertions. Volunteers who had already been put on some type of iron supplement by their doctors, were solicited for this study, as well as some who had not yet been given additional iron to take.

The primary purpose of this study was to test for the presence of **increased** oxygen in the blood. Participants were instructed to take 15 drops of "Vitamin O" or an equivalent placebo, sublingually four times daily for a total of 60 drops. General blood work was done on all the subjects prior to the study. Arterial blood draws were taken, and a second draw was performed midway through the study but limited to just six individuals for preliminary research purposes. Final draws were conducted at the conclusion of the test period.

Subjects ranged in age from 9 to 83. Both genders were equally represented, there being 30 males and 30 females enrolled at the time. A total of 126 arterial blood draws were obtained from these sixty volunteers during the six-month trial phase. **All** samples were immediately placed in a portable refrigerated storage container to guarantee their stability for several hours. They were then promptly transported to the nearest hospital blood gas labs for early analyses. Blood gas machines are used to measure pH, $PaCO_2$ (partial pressure of alveolar carbon dioxide), and PaO_2 (partial pressure of oxygen in arterial blood/arterial oxygen tension).

Blood gas analyses require arterial samples because only the right and left ventricles contain thoroughly mixed blood that has returned from the capillary beds where respiration has occurred. This blood has also passed through the liver portal where it can pick up any supplemental "special" oxygen such as "Vitamin O" (which is produced through electrical-activation with sea water). Arterial blood

is presumed to have the same pH, $PaCO_2$ and PaO_2 values as those existing in the corresponding ventricle, since no gas exchange occurs in the arteries themselves.

PaO_2 values is the measurement with which we need to be the most concerned so far as the interpretation and application of data in this particular study goes. Through comparisons of the pre- and post- readings of arterial oxygen tensions, were we able to discern any increases in blood oxygen, beyond the normal values already established for respiration action by the lungs.

PaO_2 value changes were evident in the test subjects, with varying degrees of **elevation** posted for **all** of them. Blood draws were made from wrist radial arteries while the individuals were in a resting mode and always taken on Sundays when physical exertions in the colonies are kept to an absolute minimum. By so doing, we were able to disallow for additionally inhaled **atmospheric** oxygen that comes with excessive manual labor. Therefore, the PaO_2 gains reported here in all **resting** subjects is **not** from activity-mandated inhalation, but rather from **supplemented** special oxygen taken in liquid form and produced through electrical-activation with saline solution from the ocean.

The volunteers were placed in four groups consisting of fifteen individuals apiece. They were categorized as follows:

GROUP A: "Vitamin O" with iron supplementation
GROUP B: "Vitamin O" without iron supplementation
GROUP C: Placebo with iron supplementation
GROUP D: Placebo without iron supplementation

The focus of this study was to determine if, in fact, electrically-activated oxygen in the form of liquid "Vitamin O", could have enhancing effects on normal arterial blood gases by **boosting** their oxygen contents. As the blood gas analyses of **all** participants suggests in the final measurements made, this was, indeed, the case. Which no longer begs the question of whether or not "Vitamin O" supplies the body with **some** form of supplemental oxygen, as the distribution company's marketing literature has previously implied.

This randomized, double-blinded study was initiated at great expense for the single purpose of evaluating a controversial product ("Vitamin O") purporting to contain oxygen in liquid form. Previous attempts to determine this by way of various chemical and spectrographic analyses of the product always met with failure. But now, through arterial blood gas analyses, that determination has been amply made with this group of Hutterite volunteers.

The "before" and "after" PaO_2 values listed in Table I for all sixty participants clearly show that "Vitamin O" raised existing blood oxygen levels through arterial oxygen tension **increases** in varying degrees. All that was needed here was some innovative thinking to find the most reliable and ingenious way for demonstrating this. The arterial blood gas analysis approach was the right one for settling this ongoing controversy once and for all!

See Table I in Appendix, Page 12.

While not pertinent to this study here, it may be noted in passing that ten subjects in Group B receiving "Vitamin O" without iron supplementation and one subject in Group D getting the placebo equivalent, also without iron supplementation, reported cessations of some of the previously recognized symptoms generally associated with anemia, namely, disappearance of lethargy, pallor, head pains, arrhythmia, and oxygen insufficiency. This would seem to indicate, as it did in a previous study of "Vitamin O" with chronic fatigue syndrome (CFS) sufferers[1], that there was some improvement in the hematocrit and hemoglobin values of these eleven test subjects lacking iron

(Footnotes)

[1] [1] "Electrically-activated oxygen 'Vitamin O' supplementation selectively improves energy efficiency in Hutterites demonstrating classic symptoms of chronic fatigue syndrome" by John Heinerman, Ph.D., January 23, 2001.

supplementation. Interestingly enough, the ten who took the "Vitamin O" reported cessations for more of the listed anemia symptoms, whereas the sole subject getting only the placebo, but also without supplemental iron, mentioned an absence of only a couple of symptoms. Also, none of the eleven reported any discernible changes in their occasional bouts of dizziness.

DISCUSSION

An old adage that goes, "Necessity is the mother of invention," would certainly seem to have some application here with regard to the history behind the remarkable substance being marketed under the catchy title of "Vitamin O". The last several years have not always been kind with the company that distributes this intriguing product.

One of the principal points of contention "show me the oxygen" has been elusive until now! Laboratory tests to determine this have always yielded inconclusive results. The blame for this may be equally shared between bad science and the fact that the substance itself cannot be analyzed for presumed oxygen content through conventional means.

A much more sophisticated methodology had to be used in order to correctly detect the elusive oxygen in "Vitamin O". Human blood was considered as the best medium through which such a gaseous element could be found. Arterial blood gas analysis proved to be the best choice for making this important discovery. A lengthy commentary on the statistical results of the present investigation follows hereafter.

Before interpreting the results posted in Table I, it is probably a good idea to provide brief overviews of blood circulation and blood gas physics for those who may be unacquainted with them. Such information will better clarify the interpretations yet to be given of the test results.

To get started, let's quickly examine blood circulation, which is powered by the pumping action of the heart: Blood leaves the heart via the **arteries**, which branch repeatedly until they become tiny capillaries. Samples for blood gas analyses must always be drawn from one of these arteries before the blood diffuses across capillary walls and releases its oxygen and nutrients into body tissues, while at the same time picking up carbon dioxide and cellular wastes discharged into the bloodstream from these same tissues. From the capillaries, the now oxygen-deficient blood flows into the veins, which return it to the heart. Blood then flows to the lungs, where it picks up oxygen and releases carbon dioxide, and then returns to the heart to be pumped throughout the body once more.

Besides the nutrients found within blood, there is also an assortment of gas molecules, primarily **oxygen**. The exchange of such gas molecules across permeable membranes occurs primarily through respiration, but **also** may come through supplementation. The former is a physical phenomenon essential to the maintenance of life, while the latter event provides more of an **enhancing** benefit than anything else. (When samples were drawn at different times, they were always taken on a Sunday when the test subjects were in a relative resting state and their respiration rates were slower than during weekly physical activities. This helped to somewhat **minimize** their atmospheric oxygen intake, while continuing with their steady supplementation of "Vitamin O" or its equivalent placebo – both being provided to researchers by the company distributing this product. Hence, the **reduced** physical activity on their religiously designated "day of rest" also resulted in corresponding **minimal** respiration (and, therefore, **less** intake of **atmospheric** oxygen) for all our Hutterite participants.

As with all molecules, gas molecules are always in continuous motion and randomly colliding with each other and with various surfaces. The nature of such gas molecules (including oxygen most of all) dictates a trio of irrefutable truths:

1. Gas occupies a volume of some kind. The nature of that volume and the number of gas molecules affect the behavior of the gas.
2. Gas exerts a pressure within **any** volume. The frequency of the random collisions of the molecules **within** the volume itself **determines the pressure.**
3. Gas also yields a temperature because molecular movement is a process of heat expenditure. This temperature establishes how fast the molecules move.

Oxygen happens to be the principal, life-sustaining gas involved in this particular study. Whether obtained through normal respiration or added supplementation, it fills available **arterial** space and manages to exert uniform **pressure** on all **arterial** surfaces. Now the **pressure** thus exerted by such a gas as oxygen is defined mathematically as force per unit area. In practice, though, it is common to obtain the measurement by noting the height to which the force can support a column of mercury. This is most often expressed as millimeters of mercury or mm Hg (this classic mercury scale is known internationally as the **Torricelli scale**).

The foregoing explanations are invariably simplified whenever blood gas analyses results are posted and then subsequently interpreted as to their result potentials. This is reflected in the abbreviations found in Table I: $PaCO_2$ and PaO_2 are the partial pressure designations for **arterial** blood carbon dioxide **emission** and oxygen **uptake** and utilization, measured in mm Hg on the Torricelli scale.

When the first arterial blood draws were made from all enrolled study volunteers, their blood pH, arterial carbon dioxide tensions, and arterial oxygen tensions were duly noted and recorded. Midway through the study, a second series of arterial blood draws were randomly made on six of the test subjects (three males and three females of varying age ranges). The last series of arterial blood sampling was conducted on everyone at the conclusion of the study.

Certainly the most apparent development to come out of this study were the numerous increases in PaO_2. Of the sixty participants, 48 of them demonstrated varying gains in their arterial oxygen tension levels, while another 11 showed slight decreases, and only one subject manifested no change at all. And though the statistical spread between some measured PaO_2 levels could be as little as 1 mm Hg or as great as 67 mm Hg in the two blood samplings of some subjects, yet the overall mean average **increase** for everyone's arterial oxygen during supplementation testing stood around 10.27 mm Hg.

These figures suggest obvious **oxygen** increases, and for many those gains were gradual and steady with only six cases that posted sharp and dramatic jumps above 15 mm Hg. Bear in mind also that the various arterial blood draws were performed on the weekend when physical activities were held to a minimum in keeping with the Hutterite Sabbath observances. Which, of course, means that the content of **air** oxygen in the arterial blood, obtained through breathing, would have been considerably less than during a normal work week. This definitely points to **oxygen from another source!**

Participants had been instructed to take 15 drops of therapy product ("Vitamin O"), sublingually (beneath the tongue) four times daily for a total dosage of 60 drops. These instructions were faithfully followed by the majority of participants so far as could be determined through periodic oral interviews with each of them.

An intermittent and randomized sampling of six test subjects performed midway through the trial, showed remarkable arterial oxygen gains in four of them. But when the last blood draw was performed on everyone sometime later, three of these six participants had experienced slight drops in their PaO_2 levels but not significant enough to worry over. Suffice it to say that all six did show increases of some kind in their PaO_2 values by the time the second arterial sampling was conducted on them, which was about midway into the study. Strangely enough, there was a leveling off after this in arterial oxygen tensions in these six subjects, with no new gains of any significance being observed in

the final blood draws. It's as if the supplemental oxygen levels had peaked by the third month but remained relatively steady thereafter even up to the sixth month. The different values for blood pH, $PaCO_2$, and PaO_2 in each of these six randomly selected subjects through three separate arterial samplings are given below in Table II.

See Table II in Appendix:

This ground-breaking study also yielded some other rather surprising results that may be of passing interest to consumers and alternative practitioners who've utilized "Vitamin O" in different ways for the promotion and maintenance of overall wellness. Such ancillary discoveries, while not exactly pertinent to the focus of this study here, nevertheless, contribute their own bits of knowledge towards making our understanding of human health developments more thorough and complete.

The first of these noteworthy finds has to do with the amount of carbon dioxide (CO_2) that the body emits with every exhaled breath. As body cells utilize oxygen obtained from respiration **and** supplementation, there is a corresponding yield of CO_2 which must be discharged very quickly. This particular waste byproduct is the end result of body metabolism which must be constantly eliminated, otherwise the blood pH acquires more acidity (below 7.0). And blood acidity has been implicated by some health experts as being one of the chief inducements for eventual disease evolvement in different parts of the body.

This long-held theory implies that as CO_2 residues slowly accumulate within the body, rendering its blood supply more acidic, that certain unfavorable changes also occur, albeit on a very gradual basis. The signs of old age become more apparent as the skin wrinkles sooner, the joints become stiffer, circulation is impeded, memory impaired, and cardiac performance undermined. A great deal of this is attributed to the molecular chaos created with the body by scavenger molecules knows as free radicals. It is thought that elevated CO_2 levels greatly contribute to their unfortunate production and subsequent destructiveness, but the specific mechanism by which this is done remains undiscovered.

The "Vitamin O" research with Hutterites clearly demonstrates that there is enhanced discharge of waste CO_2 in those taking the test product versus controls. A careful reexamination of Table I definitely shows this for Groups A and B, whereas Groups C and D taking the placebo experienced considerably **less** CO_2 discharges. As to what may account for this cannot be fully discerned at this time without further investigation. Perhaps, it might be something **else** associated with the "Vitamin O", such as the electrical activation employed during its initial manufacturing phase.

Nonetheless, this ancillary find has obvious therapeutic consequences when supplemented oxygen in liquid form ("Vitamin O") can expel CO_2 waste matter more expeditiously from the body. Apparent benefits might include, among other things, greater youthfulness, improved mobility, better circulation, sharper mental clarity, enhanced heart and lung functions, and increased physical energy.

Those residing in large metropolitan areas are often subject to greater amounts of smog inhalation than those living in rural settings. Constant exposure to the heavy metal pollutants common to smog can injure the respiratory system over a long period of time and inhibit its ability to effectively discharge CO_2 waste matter. Blood pH levels then become compromised – the alkaline state which keeps everything vibrant and in good working order eventually turns acidic, thereby creating a sluggish and poorly performing metabolism. In the alkaline phase of relatively good health, naturally-occurring toxins taken into the body from without, or else formed there by different means, are routinely eliminated; whereas, when an acidic state prevails, then there tends to be a slow buildup of such deleterious materials which can have a definite, negative impact on the body's general wellness. "Vitamin O" appears to amend this situation with constant use.

Another remarkable thing which the primary study on “Vitamin O’s” demonstrated oxygen content yielded was the noticeable age difference in response to the test product: Older participants reported better physiological results (e.g., more energy and stamina, greater physical activity, and improved cognition) than did younger recipients. The reason for this seems pretty evident: Older bodies with greater CO_2/free radical impairments respond more favorably to “Vitamin O” rehabilitation than do younger biological systems without any need for this.

Evidence from the initial study also points to a definite role for iron in the body’s utilization of the test product. Group A (“Vitamin O” + iron) posted a mean average increase (32.27%) or arterial oxygen levels that was nearly double what Group B (“Vitamin O” minus the iron) demonstrated (19.08%). Both placebo groups (C and D) showed negligible gains in their respective PaO_2 values (0.51% with iron and 1.91% without iron). What this suggests is that some kind of iron supplementation seems to help increase the body’s internal application of “Vitamin O”. Table III reflects this data more concisely.

See Table III in Appendix

CONCLUSION

This report has covered ground-breaking research recently conducted on sixty Hutterites from many different colonies throughout North America. While initiated primarily for the purpose of determining possible elemental oxygen content in a trade-marked liquid supplement marketed under the name of “Vitamin O”, the study also yielded several other ancillary discoveries as well during the research period itself.

Prospective candidates of varying ages with identifiable symptoms of iron-deficiency anemia were enrolled and categorized into four basic groups – two using the test product and the other pair serving as control groups on an equivalent placebo. The test product groups used “Vitamin O” with and without a prescribed iron supplement, as did the placebo groups. Instructions for self-administration of either the test product or placebo were the same for all four designated groups: Take 15 drops sublingually (beneath the tongue) four times daily (as the marketing literature for “Vitamin O” implies).

Past efforts to assess potential elemental oxygen in the test product have always proven to be somewhat elusive. Therefore, a proposal was put forward by this researcher to both the manufacturing and distributing companies of “Vitamin O” to consider the likely medium of human blood as a suitable way for making this oxygen content determination once and for all. This recommendation proved to be far more successful than previous lab analyses of just the test product itself.

Through different blood samplings and arterial blood gas analyses, this investigative pathway demonstrated once and for all that **“Vitamin O” does, indeed, contribute oxygen to the body.** This was primarily determined through the PaO_2 values observed and recorded for each of the participants, both before study commencement as well as at its conclusion. A further determining factor in support of this were the marked increases of CO_2 waste discharges from those participants in the first two groups taking the test product. Such magnified release of carbon dioxide waste can only happen when additional oxygen is present in the blood supply.

Volunteers taking prescribed iron supplements of some kind, as well as those not yet using them, were specifically sought out in order to see if there was any significant interaction between this essential mineral and the test product or equivalent placebo. The final results strongly indicate an important role of some kind for iron in the body’s maximum utilization of “Vitamin O”. However, it also needs to be pointed out that many of the subjects in Group B receiving the test product minus the

iron posted somewhat higher hemoglobin values than would have been expected. This remarkable development suggests that **electrically-activated** liquid oxygen may ameliorate general anemia in ways that are not always necessarily iron-connected. Therefore, while medically-supervised iron supplementation is definitely beneficial to the production of new hemoglobin in anemia cases, the separate use of "Vitamin O" for this problem can likewise prove assistful to some extent. The frequent consumption of iron-rich foods is a good resource to pursue for meeting the body's needs of this crucial mineral.

That the test product truly contains elemental oxygen in a manipulated (electrically-activated) form which the body can readily utilize, can no longer be doubted or questioned. Blood gas analyses **do not** lie: Groups A and B dosing with the test product posted significantly higher PaO_2 values than did those in controls (placebo groups C and D). The anecdotal responses from many of those taking "Vitamin O" also bears this out. Though unsolicited, these voluntary expressions of having "more energy and vitality," provide additional, secondary evidence to this effect, albeit somewhat subjective so far as the scientific rationale of this study goes. Thus, it would not at all be improper to state that while the main thrust of this research has been purely scientific, the proffered statements from many lay participants cannot be entirely ignored either. When taken both together with some common sense evaluation, they provide a good measure of balance to the valid health claims frequently made for "Vitamin O".

"Vitamin O" is a very remarkable product from a medical investigative point of view and deserves further research in order to explore its full and wonderful potential for the renovation of human health and restoration of hope in those deprived of total wellness and the satisfying comfort which goes with it.

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"Vitamin O"--Blood Oxygen Study
Table I

M=Male; F=Female; A="Vitamin O"+Iron group; B="Vitamin O" Minus Iron group C=Placebo+Iron group; D=Placebo Minus Iron group; pH=Symbol used to express blood alkalinity/acidity--pH 7 is neutral: above it alkalinity increases and below it acidity increases; $PaCO_2$ (same as PCO_2)=Partial pressure of alveolar carbon dioxide (an odorless air gas mixed with oxygen to stimulate respiration); PaO_2= partial pressure of oxygen in arterial blood (same as arterial oxygen tension); mmHg=millimeters of mercury which is the customary symbol used to express $PaCO_2$ and PaO_2 measurements.

SUBJECTS			**1st Arterial Blood Draw**		**2nd Arterial Blood Draw**	
Gender	*Age*	*Test Group*				
F	43	A	pH	7.11	pH	7.12
			$PaCO_2$	35 mm Hg	$PaCO_2$	37 mm Hg
			PaO_2	61 mm Hg	PaO_2	67 mm Hg
M	55	A	pH	7.14	pH	7.26
			$PaCO_2$	37mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	62 mm Hg	PaO_2	71 mm Hg
F	54	B	pH	7.54	pH	7.5
			$PaCO_2$	26 mm Hg	$PaCO_2$	33 mm Hg
			PaO_2	48 mm Hg	PaO_2	64 mm Hg
M	9	B	pH	7.41	pH	7.43
			$PaCO_2$	25 mm Hg	$PaCO_2$	30 mm Hg
			PaO_2	35 mm Hg	PaO_2	64 mm Hg
F	17	C	pH	7.53	pH	7.41
			$PaCO_2$	38 mm Hg	$PaCO_2$	29 mm Hg
			PaO_2	62 mm Hg	PaO_2	64 mm Hg
M	23	C	pH	7.5	pH	7.51
			$PaCO_2$	25 mm Hg	$PaCO_2$	26 mm Hg
			PaO_2	63 mm Hg	PaO_2	59 mm Hg
F	60	D	pH	7.22	pH	7.17
			$PaCO_2$	38 mm Hg	$PaCO_2$	31 mm Hg
			PaO_2	67 mm Hg	PaO_2	70 mm Hg
M	46	D	pH	7.4	pH	7.39
			$PaCO_2$	30 mm Hg	$PaCO_2$	27 mm Hg
			PaO_2	64 mm Hg	PaO_2	65 mm Hg
F	66	A	pH	7.1	pH	7.41
			$PaCO_2$	25 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	40 mm Hg	PaO_2	107 mm Hg
M	44	A	pH	7.46	pH	7.47
			$PaCO_2$	31 mm Hg	$PaCO_2$	36 mm Hg
			PaO_2	59 mm Hg	PaO_2	74 mm Hg
F	30	B	pH	7.5	pH	7.49
			$PaCO_2$	30 mm Hg	$PaCO_2$	37 mm Hg
			PaO_2	75 mm Hg	PaO_2	83 mm Hg
M	25	B	pH	7.12	pH	7.19
			$PaCO_2$	28 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	69 mm Hg	PaO_2	80 mm Hg
F	58	C	pH	7.34	pH	7.22
			$PaCO_2$	34 mm Hg	$PaCO_2$	32 mm Hg
			PaO_2	54 mm Hg	PaO_2	47 mm Hg

M	48	C	pH	7.19	pH	7.1
			$PaCO_2$	35 mm Hg	$PaCO_2$	31 mm Hg
			PaO_2	45 mm Hg	PaO_2	48 mm Hg
F	65	D	pH	7.47	pH	7.53
			$PaCO_2$	32 mm Hg	$PaCO_2$	31 mm Hg
			PaO_2	57 mm Hg	PaO_2	58 mm Hg
M	28	D	pH	7.35	pH	7.29
			$PaCO_2$	29 mm Hg	$PaCO_2$	29 mm Hg
			PaO_2	66 mm Hg	PaO_2	67 mm Hg
F	64	A	pH	7.33	pH	7.4
			$PaCO_2$	44 mm Hg	$PaCO_2$	51 mm Hg
			PaO_2	54 mm Hg	PaO_2	62 mm Hg
M	15	B	pH	7.35	pH	7.37
			$PaCO_2$	33 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	61 mm Hg	PaO_2	60 mm Hg
F	50	C	pH	7.31	pH	7.27
			$PaCO_2$	31 mm Hg	$PaCO_2$	30 mm Hg
			PaO_2	79 mm Hg	PaO_2	79 mm Hg
M	45	D	pH	7.28	pH	7.22
			$PaCO_2$	29 mm Hg	$PaCO_2$	26 mm Hg
			PaO_2	63 mm Hg	PaO_2	65 mm Hg
M	76	A	pH	7.58	pH	7.6
			$PaCO_2$	45 mm Hg	$PaCO_2$	53 mm Hg
			PaO_2	38 mm Hg	PaO_2	90 mm Hg
F	31	A	pH	7.26	pH	7.33
			$PaCO_2$	24 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	50 mm Hg	PaO_2	59 mm Hg
F	19	B	pH	7.11	pH	7.34
			$PaCO_2$	34 mm Hg	$PaCO_2$	43 mm Hg
			PaO_2	49 mm Hg	PaO_2	54 mm Hg
M	22	B	pH	7.37	pH	7.4
			$PaCO_2$	33 mm Hg	$PaCO_2$	38 mm Hg
			PaO_2	58 mm Hg	PaO_2	64 mm Hg
F	49	C	pH	7.4	pH	7.36
			$PaCO_2$	31 mm Hg	$PaCO_2$	29 mm Hg
			PaO_2	68 mm Hg	PaO_2	70 mm Hg
M	32	C	pH	7.22	pH	7.23
			$PaCO_2$	30 mm Hg	$PaCO_2$	31 mm Hg
			PaO_2	59 mm Hg	PaO_2	58 mm Hg
F	59	D	pH	7.35	pH	7.27
			$PaCO_2$	38 mm Hg	$PaCO_2$	35 mm Hg
			PaO_2	61 mm Hg	PaO_2	60 mm Hg
M	61	D	pH	7.37	pH	7.36
			$PaCO_2$	40 mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	55 mm Hg	PaO_2	58 mm Hg
F	33	A	pH	7.41	pH	7.5
			$PaCO_2$	31 mm Hg	$PaCO_2$	37 mm Hg
			PaO_2	65 mm Hg	PaO_2	71 mm Hg
M	20	A	pH	7.38	pH	7.4
			$PaCO_2$	33 mm Hg	$PaCO_2$	36 mm Hg
			PaO_2	64 mm Hg	PaO_2	72 mm Hg

F	14	B	pH	7.23	pH	7.25
			$PaCO_2$	36 mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	47 mm Hg	PaO_2	54 mm Hg
M	38	B	pH	7.29	pH	7.33
			$PaCO_2$	37 mm Hg	$PaCO_2$	41 mm Hg
			PaO_2	60 mm Hg	PaO_2	70 mm Hg
F	42	C	pH	7.24	pH	7.23
			$PaCO_2$	39 mm Hg	$PaCO_2$	38 mm Hg
			PaO_2	48 mm Hg	PaO_2	50 mm Hg
M	29	C	pH	7.3	pH	7.27
			$PaCO_2$	41 mm Hg	$PaCO_2$	38 mm Hg
			PaO_2	70 mm Hg	PaO_2	65 mm Hg
F	37	D	pH	7.27	pH	7.21
			$PaCO_2$	42 mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	53 mm Hg	PaO_2	51 mm Hg
M	51	D	pH	7.24	pH	7.25
			$PaCO_2$	23 mm Hg	$PaCO_2$	21 mm Hg
			PaO_2	56 mm Hg	PaO_2	57 mm Hg
F	33	A	pH	7.32	pH	7.36
			$PaCO_2$	42 mm Hg	$PaCO_2$	49 mm Hg
			PaO_2	41 mm Hg	PaO_2	55 mm Hg
M	62	B	pH	7.39	pH	7.44
			$PaCO_2$	39 mm Hg	$PaCO_2$	41 mm Hg
			PaO_2	51 mm Hg	PaO_2	64 mm Hg
F	75	C	pH	7.36	pH	7.4
			$PaCO_2$	43 mm Hg	$PaCO_2$	40 mm Hg
			PaO_2	52 mm Hg	PaO_2	54 mm Hg
M	41	D	pH	7.2	pH	7.23
			$PaCO_2$	27 mm Hg	$PaCO_2$	26 mm Hg
			PaO_2	66 mm Hg	PaO_2	67 mm Hg
F	56	A	pH	7.31	pH	7.34
			$PaCO_2$	27 mm Hg	$PaCO_2$	30 mm Hg
			PaO_2	52 mm Hg	PaO_2	80 mm Hg
M	63	B	pH	7.37	pH	7.32
			$PaCO_2$	41 mm Hg	$PaCO_2$	46 mm Hg
			PaO_2	46 mm Hg	PaO_2	57 mm Hg
F	16	C	pH	7.38	pH	7.34
			$PaCO_2$	36 mm Hg	$PaCO_2$	35 mm Hg
			PaO_2	66 mm Hg	PaO_2	67 mm Hg
M	52	D	pH	7.21	pH	7.24
			$PaCO_2$	28 mm Hg	$PaCO_2$	27 mm Hg
			PaO_2	44 mm Hg	PaO_2	41 mm Hg
F	39	A	pH	7.32	pH	7.34
			$PaCO_2$	33 mm Hg	$PaCO_2$	36 mm Hg
			PaO_2	64 mm Hg	PaO_2	72 mm Hg
M	83	A	pH	7.3	pH	7.33
			$PaCO_2$	48 mm Hg	$PaCO_2$	50 mm Hg
			PaO_2	63 mm Hg	PaO_2	81 mm Hg
F	36	B	pH	7.31	pH	7.35
			$PaCO_2$	31 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	64 mm Hg	PaO_2	75 mm Hg

M	20	B	pH	7.21	pH	7.2
			$PaCO_2$	34 mm Hg	$PaCO_2$	40 mm Hg
			PaO_2	45 mm Hg	PaO_2	57 mm Hg
F	35	C	pH	7.43	pH	7.38
			$PaCO_2$	34 mm Hg	$PaCO_2$	40 mm Hg
			PaO_2	80 mm Hg	PaO_2	82 mm Hg
M	73	C	pH	7.31	pH	7.3
			$PaCO_2$	41 mm Hg	$PaCO_2$	40 mm Hg
			PaO_2	71 mm Hg	PaO_2	70 mm Hg
F	53	D	pH	7.32	pH	7.29
			$PaCO_2$	34 mm Hg	$PaCO_2$	31 mm Hg
			PaO_2	51 mm Hg	PaO_2	54 mm Hg
M	47	D	pH	7.51	pH	7.42
			$PaCO_2$	29 mm Hg	$PaCO_2$	33 mm Hg
			PaO_2	64 mm Hg	PaO_2	72 mm Hg
F	34	A	pH	7.5	pH	7.49
			$PaCO_2$	30 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	70 mm Hg	PaO_2	81 mm Hg
M	72	A	pH	7.34	pH	7.36
			$PaCO_2$	35 mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	63 mm Hg	PaO_2	77 mm Hg
F	22	B	pH	7.35	pH	7.37
			$PaCO_2$	33 mm Hg	$PaCO_2$	41 mm Hg
			PaO_2	67 mm Hg	PaO_2	81 mm Hg
M	40	B	pH	7.22	pH	7.24
			$PaCO_2$	36 mm Hg	$PaCO_2$	39 mm Hg
			PaO_2	69 mm Hg	PaO_2	78 mm Hg
F	70	C	pH	7.34	pH	7.29
			$PaCO_2$	48 mm Hg	$PaCO_2$	44 mm Hg
			PaO_2	74 mm Hg	PaO_2	70 mm Hg
M	27	C	pH	7.29	pH	7.28
			$PaCO_2$	55 mm Hg	$PaCO_2$	53 mm Hg
			PaO_2	49 mm Hg	PaO_2	52 mm Hg
F	24	D	pH	7.31	pH	7.3
			$PaCO_2$	59 mm Hg	$PaCO_2$	57 mm Hg
			PaO_2	54 mm Hg	PaO_2	51 mm Hg
M	72	D	pH	7.37	pH	7.35
			$PaCO_2$	48 mm Hg	$PaCO_2$	47 mm Hg
			PaO_2	71 mm Hg	PaO_2	73 mm Hg

"Vitamin O"--Blood Oxygen Study

Table II

M=Male; F=Female; A="Vitamin O"+Iron group; B="Vitamin O" Minus Iron group C=Placebo+Iron group; D=Placebo Minus Iron group; pH=Symbol used to express blood alkalinity/acidity--pH 7 is neutral: above it alkalinity increases and below it acidity increases; $PaCO_2$ (same as PCO_2)=Partial pressure of alveolar carbon dioxide (an odorless air gas mixed with oxygen to stimulate respiration); PaO_2= partial pressure of oxygen in arterial blood (same as arterial oxygen tension); mmHg=millimeters of mercury which is the customary symbol used to express $PaCO_2$ and PaO_2 measurements.

SUBJECTS			**1st Arterial Blood Draw**		**2nd Arterial Blood Draw**		**3rd Arterial Blood Draw**	
Gender	Age	Test Group						
F	54	B	pH	7.54	pH	7.48	pH	7.5
			$PaCO_2$	26 mm Hg	$PaCO_2$	31 mm Hg	$PaCO_2$	33 mm Hg
			PaO_2	48 mm Hg	PaO_2	62 mm Hg	PaO_2	64 mm Hg
M	9	B	pH	7.41	pH	7.44	pH	7.43
			$PaCO_2$	25 mm Hg	$PaCO_2$	29 mm Hg	$PaCO_2$	30 mm Hg
			PaO_2	35 mm Hg	PaO_2	62 mm Hg	PaO_2	64 mm Hg
F	17	C	pH	7.53	pH	7.41	pH	7.41
			$PaCO_2$	38 mm Hg	$PaCO_2$	27 mm Hg	$PaCO_2$	29 mm Hg
			PaO_2	62 mm Hg	PaO_2	68 mm Hg	PaO_2	64 mm Hg
F	66	A	pH	7.1	pH	7.38	pH	7.41
			$PaCO_2$	25 mm Hg	$PaCO_2$	28 mm Hg	$PaCO_2$	34 mm Hg
			PaO_2	40 mm Hg	PaO_2	110 mm Hg	PaO_2	107 mm Hg
M	76	A	pH	7.58	pH	7.46	pH	7.6
			$PaCO_2$	45 mm Hg	$PaCO_2$	60 mm Hg	$PaCO_2$	53 mm Hg
			PaO_2	38 mm Hg	PaO_2	97 mm Hg	PaO_2	90 mm Hg
M	47	D	pH	7.51	pH	7.47	pH	7.42
			$PaCO_2$	29 mm Hg	$PaCO_2$	32 mm Hg	$PaCO_2$	33 mm Hg
			PaO_2	64 mm Hg	PaO_2	70 mm Hg	PaO_2	72 mm Hg

"Vitamin O"--Blood Oxygen Study

Table III

Group A			Group B			Group C			Group D		
1st		2nd	1st		2nd	1st		2nd	1st		2nd
61	[6]	67	48	[16]	64	62	[2]	64	67	[3]	70
62	[9]	71	35	[29]	64	63	[-4]	59	64	[1]	65
40	[67]	107	75	[8]	83	54	[-7]	57	57	[1]	58
59	[15]	74	69	[11]	80	45	[3]	48	66	[1]	67
54	[8]	62	61	[-1]	60	79	[-]	79	63	[2]	65
38	[52]	90	49	[5]	54	68	[2]	70	61	[-1]	60
50	[9]	59	58	[8]	64	59	[-1]	58	55	[3]	58
65	[6]	71	47	[7]	54	48	[2]	50	53	[-2]	51
64	[8]	72	60	[10]	70	70	[-5]	65	56	[1]	57
41	[14]	55	51	[13]	64	52	[2]	54	66	[1]	67
52	[44]	80	46	[11]	57	66	[1]	67	44	[-3]	41
64	[8]	72	64	[11]	75	80	[2]	82	51	[3]	54
63	[18]	81	45	[12]	57	71	[-1]	70	64	[8]	72
70	[11]	81	67	[14]	81	74	[-4]	70	54	[-3]	51
63	[14]	77	69	[9]	78	49	[3]	52	71	[2]	73
32.27% Increase			**19.08% increase**			**0.51% increase**			**1.91% increase**		

(The bracketed [ ] numbers represent the PaO2 gains or decreases made between the 1st and 2nd arterial blood samplings taken of all test subjects.)