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Treatment and management of body defense by ozone therapy

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ABSTRACT

In the Medical field ozone therapy are used to purify and oxygenate blood through transdermal ozone therapy to compliment normal procedures, to improve the immune system, in cancer treatment, diabetes and for treating wounds, ulcers and skin ailments. Ozone therapy is also effective for maintaining normal health and wellness. In this study one of the most important factor namely antioxidant power was determined before and after ozone therapy, the results as determined showed first increase in the antioxidant value, but with continues uptake of ozone the antioxidant value decreased. Continuous use of antioxidant is in turn health hazardous, because much intake of antioxidant within the body leads to the decline in the immune response of the immune system, same in the case of ozone therapy. So the therapy is beneficial only upto certain limit.

KEYWORDS

Ozone therapy;
Antioxidants;
Blood serum;
Body defence.

INTRODUCTION

Oxygen is the single most important nutrient for the body and your wellness. The body can survive weeks without food, days without water, but only minutes without oxygen. Every cell of the body requires a continuous supply to generate energy, detoxify the body and maintain healthy cells. As a lack of sufficient oxygen is a cause of poor health, leading to conditions such as arthritis, low immunity, constant tiredness, cancer, regular colds and flu's, hay fever, migraine, low vitality etc, when the body is flooded with an activated form of oxygen, namely ozone, people consistently report that these conditions as well as their general health, wellbeing and energy levels dramatically improve.

Ozone (O_3) is activated oxygen (O_2), and in a short period of time the O_3 molecule will revert back to oxygen. During this short half life cycle, the O_3 molecule can therefore be utilized for sanitation and sterilization purposes. Ozone inactivates viruses, bacteria, yeast, fungus and protozoa. Ozone therapy can be used preventatively to build the immune system or to treat a variety of infections, including Hepatitis A, B, and C, Lyme's disease, Epstein-Barr virus, Cytomegalovirus, Herpes simplex and Zoster viruses, candidacies, and fungal and bacterial infections. Besides its action as bactericidal, fungicidal, viricidal agent, it activates cellular metabolism modulates the immune system and increase and activate the body's own antioxidants and radical scavengers.

Ozone has been found to stimulate synthesis of prostaglandins and thromboxanes in human airways[1]. These doses of ozone have been proved to be safe and effective concentrations for use in humans, even in asthmat-

Regular Paper

ics, while allowing for reversible mild symptoms, lung function changes, and bronchial hyper responsiveness without clinically troublesome effects[2]. The benefit of ASA would be more significant when taking into consideration that ozone-initiated syntheses of endogenous antioxidants such as superoxide dismutase, Catalase, and glutathione occur between 12 and 24 h after exposure[3]. We attribute the excess formation of 2,3-DHBA to the hydroxyl radical generated via ozone-induced lipid peroxidation[4] and the subsequent Fenton reaction with transition metals within pulmonary tissues[5-7]. Ozone may also yield hydroxyl radical directly during the reaction with physiologic fluid on the airway surfaces[8]. Among the medical properties of ozone documented are the ability to increase the rate and capacity of oxygen absorption in erythrocytes and the activation of glycolisis in the cells via the pentose pathway. This enhances the production of 2, 3 DPG, which is known to act as a coadjuvant of oxygen release from oxyhemoglobin at tissue level[9-10]. Both effects lead to significant improvement in oxygen supply to the body, demonstrated in vivo by the measurement of pO2 increase in arterial blood as well as the reduction in venous[11]. In addition, the rheological properties of the blood improve, especially in regard to erythrocytes aggregation (preventing rouleaux formation and clumping) and membrane permeability and flexibility, because of the effect of ozone/oxygen on it. As a consequence of these effects, reduction of blood viscosity and enhancement of blood flow are achieved[12-14]. Controlled in vitro testing on the degree of hemolysis and "Heinz Body Formation" induced by the administration of ozone to blood at adequate dosage was performed[15], not finding any significant effect, neither on the hemolysis level nor in the resistance of erythrocytes to further oxidative stress.

MATERIAL AND METHODS

Chemical and equipments

All the chemicals used in the investigation were of Analytical Reagent (AR) grade and were purchased from Sigma, Merck etc. De-ionized was used for complete study. All the glass ware equipments used for extraction were sterilized prior to use. Sterilization process were performed by autoclaving at 121°C for 15 minutes.

EXPERIMENTAL WORK

Antioxidant activity

The antioxidant was measured by FRAP method (Ferric reducing ability of plasma or plant Benzie and strain 1996-1999).

Reagents

1. Acetate Buffer: 300 m mol/ltr pH 3.6 (3.1 g Sodium Acetate x 3 H_2O and 16 ml acetic acid in 1000 ml buffer solution.
2. 10 m mol/ l 2, 4, 6-tripyridyl-S-triazine (TPTZ) in 40 m mol/l HCL.
3. 20 m mol/ l $Fecl_3.6H_2O$ in distilled water.

FRAP - working solution

- 25 ml acetate buffer, 2.5 ml TPTZ solution and 2.5 ml $Fecl_3.6H_2O$ solution.
- The working solution must always be freshly prepared.
- Aqueous solution of known $FeSo_4 7H_2O$ was used for calibration.

OBSERVATION

Antioxidant properties

(a) Preparation of standard solution

0.01ml of FeSO4 solution was mixed with 1.5ml of FRAP REAGENT and volume was made up-to 5ml with distilled water. Rest of dilution was prepared by varying the volume of FeSO4 solution and distilled water as summarized in table.

Monitoring up to 5mM at 593nm/cm path length and incubated at 370C. An absorbance was recorded.

RESULT AND DISCUSSION

The human life has been seeded by nature on earth after millions of years since the formations of earth Laced with anaerobic conditions. (CO_2) saturated earthly environment). For human life which is dependent upon oxygen, the aerobic condition wear translated to aerobic condition.

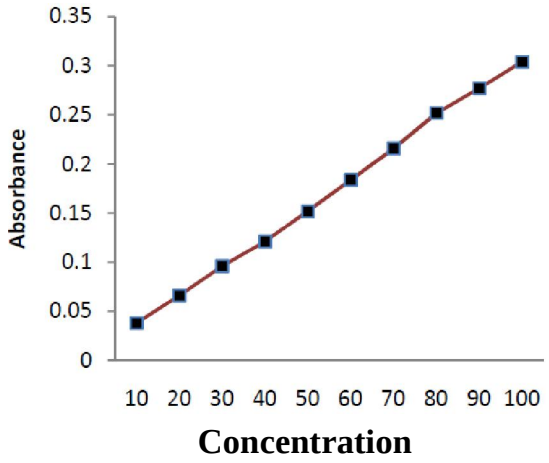
To suit the evolution and development of human life upon earth for understanding the ozone dependence and rejuvenation of human life or system, this ozone therapy was tested upon a volunteer 28 years applying

Regular Paper

single blind experiment. So it is not hazarding as per these medical reports.

Standard curve for FRAP reagent solution.

Concentration(µl)	Absorbance (µm)
10	0.038
20	0.066
30	0.096
40	0.121
50	0.152
60	0.184
70	0.216
80	0.252
90	0.277
100	0.304

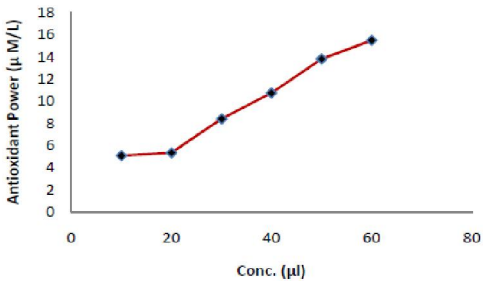


Standard graph for the calculation of (∈); ∈ = $1.5x10^{-5}Lmol^{-1}cm^{-1}$.

Data sheet for antioxidant property carried out on 6th Jan. 2011

6th JAN 2011 **Total Blood-5 ML SERUM: 1.5 ML**

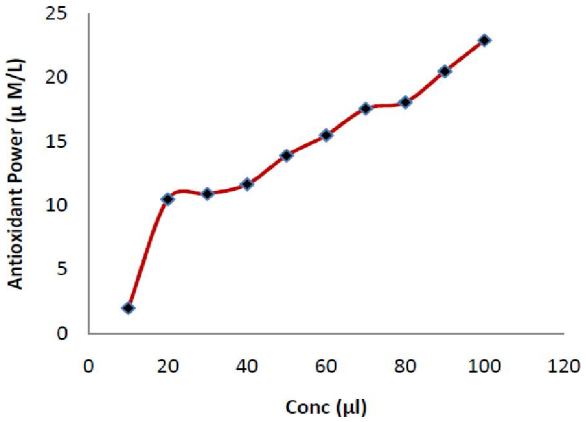
Conc. (µl)	Absorbance	Antioxidant power (µM/L)
10	0.061	05.08
20	0.064	05.33
30	0.101	08.42
40	0.129	10.75
50	0.166	13.83
60	0.186	15.50



Data Sheet for: Antioxidant property carried out on 12th Jan. 2011

12th JAN 2011 **Total Blood-5 ML SERUM: 1.3 ML**

Conc. (µl)	Absorbance	Antioxidant power (µM/L)
10	0.024	02.00
20	0.126	10.50
30	0.131	10.92
40	0.140	11.67
50	0.164	13.91
60	0.186	15.50
70	0.211	17.58
80	0.217	18.08
90	0.246	20.5
100	0.275	22.92



One of the most important parameter which was determined in this particular therapy was antioxidant power determination before and after the oxygen therapy. The result showed first the increase in the antioxidant potential, then decreases and finally remain contents, meaning there by that, upto a certain limit the therapy is useful in overcoming the health problem which are of free radical origin.

Continuous use of antioxidant is in turn health hazardous, because much intake of antioxidant within the body leads to the decline in the immune response of the immune system, same in the case of ozone therapy

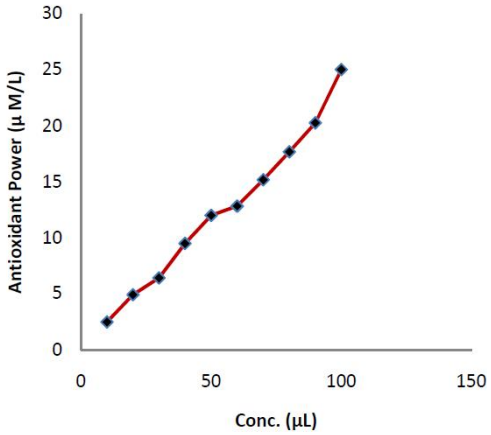
The table given below shows the comparison of Antioxidant Power with no. of days the result shows that the medicinal ozonated water decreases the Antioxidant power.

Regular Paper

Data sheet for antioxidant property carried out on 19th Jan. 2011

19 JAN 2011 **Total Blood-5 ML SERUM: 1.2 ML**

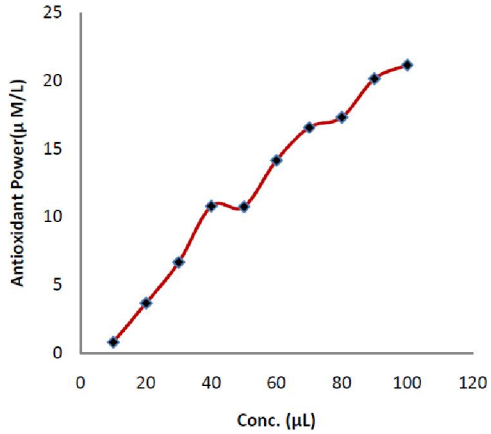
Conc. (µl)	Absorbance	Antioxidant power (µ M/L)
10	0.030	02.50
20	0.059	04.92
30	0. 077	0 6.42
40	0.114	09.50
50	0.144	12.00
60	0.154	12.83
70	0.182	15.17
80	0.212	17.67
90	0.243	20.25
100	0.300	25.00



Data sheet for antioxidant property carried out on 9th Feb. 2011

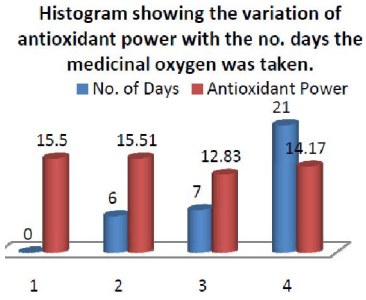
9th FEB 2011 **Total Blood-5 ML SERUM: 1.0 ML**

Conc. (µl)	Absorbance	Antioxidant power (µ M/L)
10	0.010	0.8
20	0.044	03.67
30	0.080	06.67
40	0.121	10.80
50	0.129	10.75
60	0.170	14.17
70	0.199	16.58
80	0.208	17.33
90	0.242	20.17
100	0.254	21.17



Comparison of antioxidant power with no. of days the medicinal oxygen taken

S. No.	Date	No. of Days	Antioxidant Power (µM/L)
1.	6th January	0	15.50
2.	12th January	06	15.51
3.	19th January	07	12.83
4.	9th February	21	14.17



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