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Ozonated Air Therapy for the Treatment of Upper and Lower Respiratory Tract Infections as a Potential Therapy for Prevention and Treatment of COVID19 Infection

By Sagar A. Jawale

Abstract- *Introduction:* In India and worldwide, there are millions of cases of acute respiratory infections annually killing hundreds of thousand people. It also has billions of dollars of losses worldwide. There are frequent outbreaks of deadly infections such as severe acute respiratory syndrome (SARS) in 2003, caused by a novel coronavirus (SARS-CoV), the novel swine-origin influenza A (H1N1) virus in Mexico in March 2009, Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012 and the current pandemic with Novel Corona Virus -Covid19. I did my research to find a common effective, safe, and cheap therapynamed as Ozonated air inhalation therapy (OAIT) for respiratory infections.

Materials and methods: In the last one year, I treated 21 patients (group A) with upper and lower respiratory tract infections (URTI and LRTI) with 0.1 ppm Ozonated air inhalation therapy (OAIT). OAIT was given as a monotherapy. In the same time period, 36 patients (group B) were given conventional treatment in the form of antibiotics, anti-histaminic and analgesics kept as control.

Keywords: *ozonated air inhalation therapy (OAIT), OAIT for respiratory infections, OAIT for COVID 19.*

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Sagar A. Jawale

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Materials and methods: In the last one year, I treated 21 patients (group A) with upper and lower respiratory tract infections (URTI and LRTI) with 0.1 ppm Ozonated air inhalation therapy (OAIT). OAIT was given as a monotherapy. In the same time period, 36 patients (group B) were given conventional treatment in the form of antibiotics, anti-histaminic and analgesics kept as control.

Results: In group A, for URTI, the average time of recovery of most symptoms was 26.7 hours compared to 123 hours for group B. The average time of recovery for LRTI in group A was 38.2 hours compared to 171.9 hours, as in group B. Both variables came as statistically significant. ($P < 0.05$) The therapy group A patients, had a few and mild side effects. Three patients (14.2%) had mild cough, five patients (23.8%) had a mild headache and only one patient (4.76%) had throat irritation.

Discussion: Ozonated air inhalation therapy (OAIT) is described for the first time in the medical literature. It involves breathing Ozonated air of 0.1 parts per million (ppm) concentration by a mask for 15 minutes in adults and 5 minutes for children. Ozone is a safe gas that kills all bacteria, viruses, fungi, and molds in 60 seconds in concentration of 0.04 to 0.1 ppm, whereas the toxicity for small animals is 3 to 12 ppm. In an in vitro study, application of ozone significantly decreased the absolute count of microorganisms. In another study, a single topical application by nebulization of a low dose ozone was given to all potentially pathogenic bacterial strains with known resistance to antimicrobial agents. Their growth was completely inhibited by Ozone nebulization. Ozonated water was found to be an efficient bactericidal agent against biofilms after as little as 30 seconds of exposure. In a study for deactivating viruses (17) Ozone deactivated the following 12 viruses such as influenza, strain H3N2, HSV (herpes simplex virus type 1, rhinovirus types 1A and 14 Adenovirus types 3 and 11, mouse coronavirus, Sindbis virus (SINV), yellow fever virus (YFV), vesicular stomatitis virus (VSV), poliovirus. In a study, Systemic Ozone Therapy was given by rectal Insufflation for Immunoglobulin A deficiency proved that Ozone therapy increased levels of IgA immunoglobulin. Ozone is a potent modulator of the immune system; it creates mild oxidative stress, which makes the immune system produce a large number of Interferons, agents that attack micro-organisms, and kills them. It also increases tumor necrosis factor and interleukin-2. Ozone disrupts the integrity of the bacterial cell envelope by a process of oxidation of the phospholipids and lipoproteins, and thus kills bacteria, viruses, fungi, yeast, and protozoa. Ozone therapy stimulates the oxygen metabolism, causes an increase in the red blood cell glycolysis rate, and also activates the Krebs cycle, and increases the production of ATP. The OAIT is safe as it utilizes an Ozonized air of 0.1 ppm for 15 minutes. It is far below the toxicity level set by the FDA and OSHA. Ozone is used in medicine since a long time, particularly by naturopathic and homeopathic doctors in European countries for the treatment of various viral and bacterial infections, knee arthritis treatment by Intra-articular Ozone therapy, for slipped vertebral disc and periodontal diseases. There are numerous publications on medical Ozone therapy in indexed international journals. The OAIT is very cheap. The machine for treatment costs only USD 200 and the cost per therapy sessions is just few cents. The therapy is going to be effective against the vast majority of infectious respiratory illnesses such as Influenza, novel swine-origin influenza A (H1N1), novel coronavirus (SARS-CoV), (23) Middle East respiratory syndrome coronavirus (MERS-CoV), (23) and the current COVID19 viral infections. It will also be effective against pulmonary tuberculosis and its multi drug-resistant variant. The therapy can be immediately tried on new unknown species of micro-organisms before anything is known about them until a specific vaccine or treatment is developed.

Conclusions: OAIT is a safe, effective, cheap therapy that is readily available to the masses, particularly at the time of epidemics for upper and lower respiratory infections. We need more research and a larger number of patients to know more about it. The therapy has the potential to save many patients worldwide from a variety of respiratory infections.

Keywords: ozonated air inhalation therapy (OAIT), OAIT for respiratory infections, OAIT for COVID 19.

Corresponding Author: Jawale Institute of Pediatric Surgery, Jalgaon, Maharashtra, India.e-mail: drsagarjawale@gmail.com

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I. Introduction

In India and internationally, the acute upper respiratory tract infections (URTI) and lower respiratory tract infections (LRTI) are extremely frequent. In India, about 26.3 million cases of acute respiratory infections (ARI) were reported in 2011, with an incidence of about 2,173 cases per one hundred thousand population. ARI contributes to 15-30% of all under-five deaths in India.(1)

In Greenland, the incidence of upper and lower respiratory tract infections was 1.6 and 0.9 episodes per 100 days at risk, respectively. Up to 65% of the episodes of ARI caused activity restriction; 40% led to contact with the health center. (2)

Respiratory infections have a tremendous financial loss in India, and the world over. In the united states alone, upper and lower respiratory tract infections are estimated to be responsible for approximately $15 billion in direct treatment costs. Physician charges account for about one half, and hospital care accounts for approximately one-quarter of these costs. (3)

Respiratory tract infections have a lot of mortality as well. A study (4) was conducted in the year 2013, lower respiratory tract infections caused more than 2·6 million deaths worldwide. It makes them the fifth leading cause of death overall and the leading infectious cause of death in children younger than five years.

A lot of respiratory tract infections are caused by viruses. Although there are antiviral drugs not for all viruses. They are very costly and have severe side effects, hence they are not recommended for a lot of infections. It means we have to leave a lot of viral diseases to be taken care of just by the patient's immune system.

In 2003, there was worldwide panic and chaos due to the outbreak of severe acute respiratory syndrome (SARS), caused by a novel coronavirus (SARS-CoV). SARS had claimed the lives of 774 among 8,098 affected cases scattered in 29 countries on all five continents.

The outbreak of human infection due to the novel swine-origin influenza A (H1N1) virus began in Mexico in March 2009. (7)From April 12, 2009 to April 10, 2010, us center for disease control estimated that there were 60.8 million cases (range: 43.3-89.3 million), 274,304 hospitalizations (range: 195,086-402,719), and 12,469 deaths (range: 8868-18,306) in the United States due to the (H1N1) pdm09 virus.

The Middle East respiratory syndrome coronavirus (MERS-CoV) (8) is a lethal zoonotic pathogen that was first identified in humans in Saudi Arabia and Jordan in 2012. Between April 2012 and December 2019, 2499 laboratory-confirmed cases of MERS-CoV infection, including 858 deaths (34·3% mortality) were reported from 27 countries to WHO, the majority of which were declared by Saudi Arabia (2106 cases, 780 deaths)

Currently, the world is facing a pandemic with Covid19 (9), the Novel Corona Virus with over million cases infected worldwide, and 54,226 deaths. It has mortality ranging from 2-10 %.

In the year 2018, according to WHO, a total of 1.5 million people died from TB (including 251 000 people with HIV). Tuberculosis is one of the top 10 causes of death worldwide, and the leading cause of death from a single infectious agent (above HIV/AIDS). Estimated 10 million people fell ill with tuberculosis(TB) worldwide in the year 2018 which includes, 5.7 million men, 3.2 million women, and 1.1 million children. The OAIT can be used as an adjuvant therapy in pulmonary tuberculosis. Multidrug-resistant TB (MDR-TB) has become a public health crisis and a threat to the health security. According to the WHO, there were 4,84,000 new cases of tuberculosis with resistance to rifampicin, which is the most effective first-line drug for treatment of tuberculosis. Out of the 4,84,000 cases, 78% had MDR-TB.

All these viruses keep mutating and changing their antigenicity which makes it very difficult to create a vaccine. Due to frequently changing viral strains, the vaccine is ineffective on the newly mutated virus. The treatment is equally challenging. Even today, there is no specific and guaranteed treatment to these viruses. It means such new outbreaks with new viruses will keep happening in the future, putting human life at risk. We need a general treatment option for the respiratory mico-organisms so that we get time before a specific vaccine and treatment is found. It will reduce the morbidity and mortality of respiratory tract infections.

I did my research to find an effective, safe, and cheap solution to these micro-organisms. Since we are dealing with respiratory tract infections, the new therapy to be invented should be in the form of an inhalant so that it acts on the bronchial tree as well as the alveoli of the lungs. Although a lot of anti-microbial agents such as alcohol, iodine, formalin, heatkill the mico-organisms in a petri dish, they are too toxic to be used in the human body. I also wanted my new therapy to be free of antibiotic resistance.

The name of my therapy for the above-mentioned problem is Ozonated air inhalation therapy (OAIT).Ozone is a molecule that contains three atoms of oxygen and thus has the formula O3. It is a pale blue gas with a pungent smell. Ozone was first discovered in 1839 by German scientist Christian Friedrich Schonbein.

II. Materials and Methods

A written permission from the Institutional ethical committee set at Jalgaon medical association (IMA) is taken for the study. In the last one year, I treated 21

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patients (group A) with upper and lower respiratory tract infections (URTI and LRTI) with 0.1 ppm Ozonated air inhalation therapy (OAIT). The trial was taken in my Jawale Institute of Pediatric Surgery. The OAIT was given as a monotherapy to group A without any antibiotics, antivirals, antihistaminic and analgesics. In the same time period, 36 patients (group B) were given conventional treatment in the form of antibiotics, anti-histaminic, and analgesics. Critical patients were excluded in both groups. Age range was six months to 76 years in group A and eleven months to 78 years in group B. All patients have been treated on OPD basis. Patients were distributed in both groups in a random manner. Detailed history and throat examination of all the patients were performed on every visit. Every patient's complete hemogram was done before and after 15 days of the therapy. Every patient's X-ray was done before therapy and after 15 days who had positive X- ray findings. The duration of therapy was 15 minutes for adults, and 5 minutes for children. The variables to be studied on both groups were history, clinical examination findings, complete hemograms, X- rays and time taken for total resolution of symptoms. Patients were classified into URTI and LRTI based on the above parameters. The Ozone machine used for the therapy is a modified form of air purifier that produces Ozone gas of 15 mg/ hour. It means 0.25 mg Ozone per minute. The output of the machine is calibrated with an air Ozone meter to 0.1 ppm Ozonated air. The patient breaths Ozonated air by connecting a disposable Oxygen mask with its tube to the output of the machine.

In group A, fourteen patients had URTI (66.66%) and seven patients had LRTI (33.33%). Eighteen patients had the fever (85.7%), nine had rhinorrhea (42.8%), thirteen patients had a cough (61.9%) and fourteen had a sore throat (66.66%), and three had purulent sputum (14.2%). X ray chest showed mild infiltration in three patients of LRTI in group A. All seven patients who had LRTI showed increased WBC count above normal limits. In group B, twenty patients had URTI (55.55%), and sixteen patients had LRTI (44.44%). %). Twenty-eight patients had a fever (77.7%), thirteen had rhinorrhea (36.1%), eighteen patients had a cough (50%) and twenty- one had a sore throat (58.33%) and eight had purulent sputum (22.22%). X ray chest showed mild infiltration in six patients of LRTI in group A. All fourteen patients who had LRTI showed increased WBC count above normal limits. In group A, all fourteen patients who had URTI required the treatment only once. The remaining seven patients who had LRTI required the treatment on an average three times with a gap of 24 hours.

III. Results

The patients were followed up daily for first the first seven days and then weekly for a month and monthly thereafter. The longest follow up was one year and shortest of three months. In group A, for URTI, the average time of recovery of most symptoms was 26.7 hours compared to 123 hours for group B. This difference came statistically significant ($P < 0.05$). The average time of recovery for LRTI in group A was 76.8 hours compared to 171.9 hours as in group B. This difference also came as statistically significant. ($P < 0.05$)In group A, Xray chest done after fifteen days showed total disappearance of infiltration on X ray chest in all three patients and in group B, three patients had total resolution of infiltration on Xray chest and another three had reduced infiltration. The raised WBC count in seven patients in group A came within normal limits in one-week time. Only four out of the fourteen patients had WBC count in normal limits. The remaining ten patients had a WBC count in normal limits only after twenty-one days. The therapy group A patients had a few and mild side effects. Three patients (14.2%) had a mild cough which disappeared after three hours without treatment. Five patients (23.8%) had a mild headache which disappeared in six hours. Only one patient (4.76%) had a throat irritation that disappeared after twelve hours without treatment.

IV. Discussion

Ozonated air inhalation therapy (OAIT) is described for the first time in the medical literature as a treatment of upper and lower respiratory tract infections.It involves breathing Ozonated air of 0.1 parts per million (ppm) concentration by a mask for 15 minutes in adults and 5 minutes for children. The therapy can be repeated with a 12-hour gap if necessary. In group A patients, it was given as a monotherapy to see its effectiveness. Hence, no critically ill patients were included in group A. Group B patients were kept as control who received conventional treatment for their symptoms. The recovery was dramatically fast in group A than B. OAIT was effective in URTI with just a single application. Whereas in LRTI, it required an average of three applications with a gap of 12-hours.

Rhinoviruses account for 25 to 30 percent of URIs; respiratory syncytial viruses (RSV), parainfluenza and influenza viruses, human metapneumovirus, and adenoviruses for 25 to 35 percent; corona viruses for 10 percent; and unidentified viruses for the remainder. (10) Streptococcus pneumoniae and Hemophilus influenzae were the most detected bacteria with 14.2% (20/141) followed by Klebsiella pneumoniae, 9.2% (13/141), Staphylococcus aureus, 7.1% (10/141), and Moraxella catarrhalis, 4.3% (6/141). Bacterial coinfection accounted for 23% (14/61) with Hemophilus influenzae being implicated in 19.7% (12/61). (11)

Ozone is a safe gas that kills all bacteria, viruses, fungi, and molds in 60 seconds (12).The

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concentration of ozone which kills bacteria, has been variously reported to be 0.04 to 0.1 ppm (14), whereas the toxicity for small animals is 3 to 12 ppm (Stockinger 1959). Hence 0.1 ppm is the concentration of Ozone in the air used in the therapy.

In an in vitro study (13) the antibacterial effect of ozone was tested on the suspension of three different bacteria inoculated in prepared canals of extracted human teeth. Application of ozone significantly decreased the absolute count of microorganisms (89.3%), as well as the count of each type of bacteria separately (Staphylococcus aureus 94.0%; Staphylococcus epidermidis 88.6% and Enterococcus faecalis 79.7%).

A single topical application of a low dose Ozone by nebulization was applied to the bacterial colonies in a study. It completely inhibited the growth of all potentially pathogenic bacterial strains with known resistance to antimicrobial agents. (15) The bacteria inhibited were Escherichia coli, oxacillin-susceptible Staphylococcus aureus, vancomycin-resistant Enterococcus faecalis, oxacillin-resistant Staphylococcus aureus, carbapenem-resistant Acinetobacter Baumannii, extended-spectrum beta-lactamase-producing Klebsiella pneumoniae, Acinetobacter Baumannii susceptible only to carbapenems, and Pseudomonas aeruginosa susceptible to imipenem and meropenem. All isolates were completely inhibited by the Ozone Oxygen mixture. Growth occurred in the other 2 groups which were not exposed to the Ozone Oxygen mixture.

In a study, Ozonated water was found to be an efficient bactericidal agent (16) against biofilms after as little as 30 seconds of exposure. The study proved that ozonated water effectively destroyed Staphylococcus aureus, and Pseudomonas aeruginosa bacterial biofilms in vitro.

In a study for deactivating viruses (17) Ozone deactivated the following 12 viruses:- influenza, strain H3N2, human isolate (from BC Centre for Disease Control), propagated in MDCK cells; HSV (herpes simplex virus type 1, BC-CDC), placed in Vero cells; rhinovirus types 1A and 14 (RV 1A and RV 14, from ATCC), placed in H-1 cells; Adenovirus types 3 and 11 (ATCC), in A549 cells; mouse coronavirus (MCV, from Dr. Pierre Talbot) in DBT cells. Sindbis virus (SINV), yellow fever virus (YFV), vesicular stomatitis virus (VSV), poliovirus (PV, vaccine strain), vaccinia virus (VV), all ATCC strains, were grown in Vero cells. All the stock viruses were prepared as clarified cell-free supernatants, with titers ranging from 106 to 109 pfu (plaque-forming units) per ML.

In a study, Systemic Ozone Therapy was given by rectal Insufflation for Immunoglobulin A deficiency (18). It proved that Ozone therapy is a safe, and minimally invasive treatment modality for the treatment of IgA deficiency, as it produced antioxidant and immunomodulatory effects.

Ozone is a powerful modulator of the immune system (19). Inside the blood, it creates mild oxidative stress which makes the immune system produce a large number of Interferons, agents that attack micro-organisms and kills them. Ozone increases the production of interferon and the tumor necrosis factor and interleukin-2 when administered at a concentration of between 30 and 55 μg/cc. A cascade of immunological reactions occurs after the production of interleukin-2 [19] Ozone is a twin brother of Oxygen, hence can even enter a cell and cross blood- brain barrier. Thus, the Ozone generated in minute quantities in the blood can kill tissue infection.

A study was performed to clarify the immunomodulating properties of Ozone (19) by stimulation by Ozone on 1)isolated peripheral human blood mononuclear cells (PBMC) from normal donors with either Ozone or Ozonatedserum 2) the range (in terms of O3 concentrations) of the therapeutic window 3)the stimulatory and toxic effects and 4) the pattern, of both proinflammatory and immunosuppressive cytokine production up to 86 hours after exposure to O3.Results show that ozone can act as a weak inducer of cytokines producing IL-6,IL-4, TNF-α, IFN-γ, IL-2, and IL-10. Most importantly, there is a significant relationship between cytokine production and ozone concentration. Analysis of the proliferation index shows that progressively increasing O3 concentrations inhibit IP and therefore appear cytotoxic. Ozone therapy, as a sole treatment, is shown in a case report (18) to quickly and completely resolve a rapidly advancing case of tick bite cellulitis.

Ozone disrupts the integrity of the bacterial cell envelope by a process of oxidation of the phospholipids and lipoproteins, and thus kills bacteria, viruses, fungi, yeast, and protozoa. In fungi, Ozone inhibits cell growth at certain stages. Ozone deactivates the viruses by damaging the viral capsid and upsets the reproductive cycle by disrupting the virus-to-cell contact with peroxidation. The cells have a weak enzyme coating which make them vulnerable to invasion by viruses. It also makes them susceptible to oxidation and elimination from the body, which then replaces them with healthy cells. [21] The best part of the story is micro-organisms could not develop resistance to Ozone as its action is a direct physical damage to the cell wall.

Ozone therapy stimulates the oxygen metabolism. It leads to an increase in the red blood cell glycolysis rate. This leads to the stimulation of 2,3-diphosphoglycerate which increases the amount of oxygen released to the tissues. Ozone activates the Krebs cycle by enhancing oxidative carboxylation of pyruvate. This increases the production of ATP. Ozone causes a significant reduction in NADH which oxidizes cytochrome C. There is an increased production of enzymes which act as free radical scavengers and cell-wall protectors. Such enzymes are, glutathione peroxidase, catalase and superoxide dismutase. Ozone

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also leads to the production of prostacyclin, which is a vasodilator. [21]

The argument for the safety of OAIT is as follows. The machine used for the therapy is a modified form of Ozone air purifier that produces Ozone gas from atmospheric Oxygen. Since atmospheric Oxygen is only 21% of total air, hence Ozone production is limited (0.1 ppm) and can- not reach toxic levels by any chance. As already stated, Ozone has a great level of safety margin. It kills all bacteria, viruses, fungi, and molds at a low concentration of 0.04 ppm which is extremely safe for humans. The Food and Drug Administration (FDA) allows ozone output of indoor medical devices to be 0.05 ppm or below. The Occupational Safety and Health Administration (OSHA) has set a safety limit of Ozone for the workers. It states that the workers should not be exposed to an average concentration of Ozone more than 0.10 ppm for 8 hours. OAIT exposes patient to 0.1 ppm Ozone only for 15 minutes.0.1ppm is an extremely small concentration of Ozone and means just one part in ten million parts of air.US FDA has approved Ozone gas for the processing of a variety of dairy, food and poultry products in year 2001. (24)A lot of European countries add Ozone in water as a disinfectant treatment. The concentrations used are about ten ppm. After drinking Ozonated water, the gas is also absorbed in the blood. Yet no side effects are reported in the medical literature about drinking Ozonated water. French people are drinking Ozonated water for more than 100 years now without any problem.

The ancient Vedic plant holy basil, is also known as Tulsi (Ocimum Tenuiflorum), produces oxygen for 20 hours and Ozone for 4 hours. We need modern research to prove this claim. That is why every household was advised to have it and worship it. The Ozone produced by the plant has saved millions of Indians of deadly respiratory infections in the era when there were no antibiotics and antivirals. Even today, everyone can have these plants in the garden and gallery of houses for the said reason.

Ozone is used in medicine for a long time, particularly by naturopathic and homeopathic doctors in European countries. The common indications are a variety of viral and bacterial infections, Intraarticular Ozone therapy for knee arthritis, for slipped vertebral disc and for periodontal diseases (22). There are numerous publications on medical ozone therapy in indexed international journals.

Ozone is a natural part of the atmosphere with the concentration of ten ppm in the upper stratosphere. The natural amount of ozone in the lower atmosphere is generally around 0.04 ppm. That amount is not harmful to human health. It means we are breathing 0.04 ppm Ozone since time immemorial and is perfectly normal. It appears to be nature's plan for keeping micro-organisms in check to avoid epidemics.

But, due to environmental pollution, the Ozone in the lower and upper atmosphere has dramatically reduced creating an Ozone hole. I measured Ozone concentration with an air Ozone meter in the air around my city in many places and it is nearly zero due to pollution. That is why we have to produce Ozone artificially indoors and outdoors to protect ourselves from deadly microbial infections. One such way is to use indoor Ozone air purifiers which produce Ozone in 0.05 ppm concentration. If an air Ozone air purifier is put in the room of an infected person, his infection is not going to spread. I prefer to keep one in my consulting room that keeps me safe from the micro-organisms brought by the patients. If you keep it on 24/7, viruses can-not enter your house and office. We need Ozone air purifiers in every public place like railway waiting rooms, railway bougies, Buses, cars, airport, aero plane cabins, school, hospitals, offices, doctor's consulting rooms, etc. By this policy, we are going to prevent a lot of infectious respiratory illness and epidemics. By use of mass-scale Ozone air purifiers, we are also doing service to humanity as it will help healing the Ozone hole faster.

One reason for apathy towards Ozone therapy is that Ozone is a naturally occurring gas and can- not be patented. It is very cheap and no money can be earned by selling it. But, such a commercial attitude of the corporations is hurting the interest of patients.

OAIT is very cheap. The machine for therapy costs only USD 200 and the cost per therapy sessions is just few cents. That is why, it can be delivered on a mass scale in epidemics. The therapy is affordable even to developing countries; Hence, it will have a vast positive impact on global healthcare.

The therapy is going to be effective against a vast majority of infectious respiratory illnesses such as Influenza, novel swine-origin influenza A (H1N1), novel coronavirus (SARS-CoV), (23)Middle East respiratory syndrome coronavirus (MERS-CoV), (23) and the current COVID19 viral infections. It will also be effective against pulmonary tuberculosis and its multi drug-resistant variant.

The influenza group of viruses have an incubation period of 2 to 4 days. Some of the strains have incubation period of 7-14 days. During this period, the person remains a carrier and spreads the infection. The OAIT can be given to such carriers to eradicate the infection, and the spread of the disease can be limited. All the contacts of deadly infections such as H1N1, MERS-CoV and Covid 19 can be subjected to a prophylactic OAIT to eradicate the organism in the incubation period itself.

By giving OAIT early to every patient of URTI, we can reduce the morbidity as well as mortality as the disease will not progress further, which leads to a lot of complications.

The therapy can be immediately tried on new unknown species of micro-organisms before anything is

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known about them until a specific vaccine or treatment is developed. The therapy will save many lives as many people lose their lives till specific treatment or vaccines are invented.

I do not claim that OAIT will be equal or superior to the specific vaccine or specific drug treatment. But the therapy is safe, cheap, and easily available with great compliance. A large part of the world population can only afford and have access to such a therapy particularly in desperate situations such as epidemics.

I also agree that this article is only the beginning of this type of research. A vast number of studies and clinical trials will be necessary on variety of micro-organisms in the future to perfect the therapy.

V. Conclusions

OAIT is a safe, effective, cheap therapy that is easily available to the masses particularly at the time of epidemics for the upper and lower respiratory infections. We need more research and a larger number of patients to know more about it. The therapy has the potential to save many patients worldwide from a variety of respiratory infections. The treatment can be used as an immediate measure for new infections with unknown micro-organisms even before a specific vaccine and treatment is developed.

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