Methodical Approach to Inactivate Any Microbial Element like SARS-CoV2

Sanjoy Majumdar\textsuperscript{1} · Amartya Neogi\textsuperscript{2} · Rajdeep Dutta Gopal Dutta\textsuperscript{3} · Suddha Satwya Chatterjee\textsuperscript{4} · Meghna Dutta\textsuperscript{5}

Abstract The proposed paper discusses Far UVC could assassinate microbes without harming healthy tissues. The plasma ion generation will increase the ion (O\textsuperscript{-2}) generation in abundance along with hydrogen ion (H\textsuperscript{+}), and at the same time, the negative hydroxyl radical (OH\textsuperscript{-}) formed will merge with the positive (H\textsuperscript{+}) ion of the virus to break the structure of it. The silver nanoparticle which is present in the diffuser with thermostat support is very effective for destroying the microbial elements by heating the gel present within the diffuser. The gel will mix in the environment, and it will also increase the activity of T cell generation and act as an immunoglobulin booster in the human body while inhaling it. In the proposed device, we are using warm humidified CO\textsubscript{2} strategic therapy in low dose which is able to suppress any microbial element like SARS-CoV2.

Keywords AQI · Far UVC · Diffuser · HEPA filter · Mass flow controller · Plasma ion

Introduction

Information of Corona Virus also referred as Covid-19 first emerged in December 2019 in Wuhan, China. Covid-19 is a group of general viruses out of which some affect only animals like bats, cats, etc., while others also affect human being. Covid-19 can set off sickness as minor as the common cold or more subsequently such as bronchitis, pneumonia and other complicated disorder.

Covid-19 is communicable, but it is doubtful as to how it correlates with the general Flu. If a person is infected by Covid-19, then they may be transmissible for a greater time span than if they had the flu according to CDC \cite{1}. Airborne-induced illnesses are expanded from person to person through droplets in the air from a contaminated person coughing, sniffing or talking. But according to John Hopkins Medicine, there is a positive difference Covid-19 might be spread through route meaning tiny droplets remaining in the air which could lead to disease, despite after someone who is ill is no longer nearby \cite{2}. Indicators of Covid-19 include a light to critical respiratory illness associated with fever, cough and breathing problems. Other symptoms include running nose, sore throat and headaches.

According to Dr Brenner of Columbia University who has been researching for the last 20 years \cite{3}, Far UVC
light has a very short span and cannot pierce through the outer dead cell layer of human epidermis or through the mucin layer in the eye. So, it is not a human hazard on Far UVC light. As viruses and bacteria are much tiny than human cells, Far UVC light gets through to their DNA and eliminates them.

Carbon dioxide (CO₂) is a basic biogas and has been used for clinical purposes for over a century due to its unique properties [4]. CO₂ can also enhance the effect of some other germ-destroying agents which further improves the protection imparted [5]. Irving Langmuir first coined the term ‘plasma’ in 1927 to describe an ionized gas [6]. Distinctive HEPA standards will be 99.997% powerful at a particle size of 0.3 micron. Silver nanoparticles (AgNPs) are widely used as disinfectant. Colloidal silver is a significantly effective, natural safe alternative of recent days against SARS-CoV2 [7, 8]. The H14 HEPA (high efficiency particulate air) filters [9, 10] are made from a microfine glass fiber paper media which is flame-proof and water-resistant.

In the pandemic situation, we have to think of a unique and generic solution because vaccination is not a proper solution. We have to get rid of any type of microbial element or any type of airborne disease.

We can regulate the UV generation by creating a circuit device consisting of two FAR UVC electric bulbs generating UV. The continuous very low dose of 2 mj/cm² emitted from Far UVC light must be used for inactivation of any microbial element. The plasma ion generation will inactivate the microbial element present in the atmosphere. The cable or wire that is used must be polyfiber cable or wire as shown in Fig. 1. The six parts of the device are shown in Fig. 1, and it will be:

1. Far UVC bulbs.
2. Warmed humidified CO₂ generator.
3. Plasma ion generator.
4. Diffuser.
5. Air index quality (biosensor) sensor.
6. Silencer device.

The structure of the Device (i) consists of 2 FAR UVC bulbs each of 15 Watts 220 V and draws current 0.06 amps. Far UVC light will emit wavelength of 200 to 210 nm with low dose 2 mj/cm²; second Far UVC bulb will emit 211 to 222 nm of low dose 2 mj/cm². The UV ray can emit the Far UVC for destroying the microbial elements which are in nearby distance. The structure of the Device (ii) consists of 15 Watts, 220 V warm humidified CO₂ generator, voltage speciation 220 V, current specification 0.06 amps.

The structure of the Device (iii) consists of polycable wires and H14 HEPA filters.

The H14 high efficiency particulate air (HEPA) filters are made from a microfine glass fiber paper media which is flame-proof and water-resistant. Distinctive HEPA standards will be 99.997% powerful at a particle size of 0.3 micron.

Voltage specification: 220 V and 60 Hz, Current specification: 0.11 amps, Power specification: 24 Watts (Safe for babies and adults), Capacitance: 1 µF, Fan required increasing ion density, Mass flow controller, Nebulizer, Resistor, Air-fed helium gas chamber capacity of 7 cubic meters, Plasma ion generation: 25,000–30,000 ions per cm³ in 1 s.

The structure of the Device (iv) consists of A diffuser which consists of (a) thermostat, (b) gel.

Voltage speciation 220 V, current specification 0.06 amps.

The structure of the Device (v) consists of air quality sensor (biosensor) device.

Voltage speciation 220 V, current specification 0.06 amps.

The structure of the Device (vi) consists of silencer device.

Voltage speciation 220 V, current specification 0.06 amps.

In Fig. 1, bulb denotes device (i), CO₂ generator implies device (ii), plasma ion generator denotes device (iii), diffuser denotes device (iv), AQIs sensors imply device (v), and silencer denotes device (vi).

The device in Fig. 2 contains an indicator panel; it will display red if the AIQ (biosensor) sensor index is above 300. The touch panel consists of 4 single-pole single-throw switches. The plasma ion generation will be 25,000–30,000 ions per cm³ in 1 s; generation will be found to occur with a permissible 0.5 PPM O₃. The two Far UVC bulbs will be of wavelength 200–210 nm and 211–220 nm and will emit low dose of 2 mj/cm² while silver nanoparticle generation will increase the activity of T Cell and it will act as immunoglobulin booster. The warm humidified carbon dioxide has been used to possess antioxidant and anti-inflammatory properties, to improve blood oxygenation and enhance oxygen delivery to organs. The unique biological, physical, and medical properties of CO₂ make it a very promising anti-Covid-19 therapy for reduction and conquering SARS-CoV2 infection. The device is also using H14 HEPA filter and carbon filter along with mass flow controller and nebulizer. The device will operate on 220 V AC and 60 Hz frequency.

In plasma ion generation of Fig. 3, the H⁺ and O₂⁻ ions combine to form OH⁻ radical which in turn combines with hydrogen part (H⁺) of the virus to form H₂O in air. Hence, in this way the molecular structure of virus (which may be single-stranded RNA or single-stranded DNA) is broken and the virus is unable to replicate. In other way, the
protein part of any virus is broken down into peptides or completely into amino acids by the process of proteolytic sterilization as displayed in Fig. 3.

We are getting extremely good results of this device because of the four-way attack on microbes as per Fig. 1, and at the same time, the disease due to said airborne disease will be decreased by 99.9%. The device will help us not only as antimicrobial but at the same time as an immune booster. The device can operate on normal voltage and give us an extremely good solution for all of us regarding anti-microbial activity and is also safe for old people and babies. At the same time, this device will be cost-effective for anybody. Although this device will kill any type of microbial element like bacteria, viruses, protozoa, parasite, there will be no antibody creation inside our body, but the silver nanoparticle present in the device will increase the T cell activity and also will be used as an immunoglobulin booster, and similarly, inhalation of warm humidified CO₂ will also kill the microbial element inside our body when we inhale a little more CO₂ and also strengthen the immune system, and hence, it will increase the power of our immune system of our body.

Fig. 1 Product model design circuit
The colloidal silver or tiny AgNPs act as a catalyst and make a bonding with the spike of the virus and thereby lead to destruction of it. We have observed that AgNPs or the colloidal silver can be directly inhaled via the nasal or oral route, and via mucus membrane it can directly act on the pathology caused by SARS-CoV2 in the alveoli. The acute lethal dose of silver nitrate has been estimated at 10 g.

Table 1 denotes the result of four-way attack on microbes. We have provided the ranges/values within the tolerance level so that human body remains unaffected.

We have proposed an anti-microbial device with the four-way attack on microbes and also as an immune booster for any living mammal like humans. The Far UVC ray, warm humidified CO₂ and the plasma ions will help to prevent any type of microbial element, and on the other hand, the silver nanoparticle will be used to increase the immune system of our body to prevent any type of microbial attack. Our device will give new dimension to the medical science on how to stop the spread of any type of airborne disease.
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**Fig. 3** Plasma effect on virus

**Table 1** Result of four-way attack on microbes

| Methodology used            | Range/values                                                                 | Side effect                      | Efficiency |
|-----------------------------|------------------------------------------------------------------------------|----------------------------------|------------|
| Far-UVC bulbs               | 200–222 nm                                                                   | Safe for babies and old people   | 95%        |
| Plasma generation           | 25,000–30,000 ions generation per cm3 in 1 s                                 | Safe for babies and old people   | 99%        |
| Silver nanoparticle         | The acute lethal dose of silver nitrate has been estimated at 10 g           | Safe for babies and old people   | 99%        |
| Warm humidified carbon dioxide | Suggested protocol for early inhaling CO2 gas (4–14%) itself or composite with other Covid-19 inhaler medications can save lives by disinfection and improve mild and moderate Covid-19 patient treatment | Safe for babies and old people   | 95%        |
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