

Journal of Advanced Scientific Research

ISSN 0976-9595 Short Review

Available online through http://www.sciensage.info

IMMUNITY AND TREATMENT POSSIBILITIES OF COVID-19 INFECTED PATIENTS

Ashesh Garai

Department of Chemistry, Rammohan College, 102/1 Raja Rammohan Roy Sarani Kolkata, India *Corresponding author: agpolymer@gmail.com

ABSTRACT

As on 4th October, 2020, coronavirus (COVID-19) has taken ~ 1.04 million lives and infected ~ 35 million people and the outbreak is continuing. Wearing N95 face masks and regular hand-washing (with soap and alcohol base hand sanitizer) is not sufficient to prevent the transmission of coronavirus. This leads a modification needed for the procedure of prevention from coronavirus infection. The knowledge of coronavirus spreading and infecting will help to amend the procedure. It was seen that high immune persons are less prone to infection by COVID-19 virus than weaker immune persons. Till now there is no device yet to measure the immunity of a person and thus cannot differentiate between lower and higher immune person, leads to all persons under lockdown. Here a probable method of measuring immunity for COVID-19 infection is proposed. A Traditional therapeutic treatment for COVID-19 infected patients is also discussed. As NaHCO₃ is very cheap and less hazardous than soap and alcohol base sanitizer so NaHCO₃ solution may be used for hand-washing, nasal drop and gargle solution to prevent from coronavirus infection. NaHCO₃ solution gives extra protection from coronavirus infection when it is used with mask. Beside that considering the biological immovability of NaHCO₃ (mainly in human blood plasma), it is strongly recommended to use NaHCO₃ for the prevention as well as treatment of coronavirus patients.

Keywords: COVID-19, Immunity, Public health, Protection, Prevention.

1. INTRODUCTION

There is no medicine or vaccine till now to treat coronavirus. Hands washing with soap, face masks wearing and following the lockdown (social distancing) are the cumulative ways to defeat coronavirus infection [1-3]. But following these instructions are not enough to stop spreading of COVID-19 infection. Thus it is the time to improve the technology of prevention from COVID-19 *i.e.* to think an alternate way of prevention.

Lockdown usually break the backbone of countries economy and also human freedom to work. From a chemist viewpoint to play with coronavirus, effect of pH on coronavirus is need to be understood. Air is generally acidic in nature having pH 5.7, as small amounts of carbon dioxide dissolved in water which makes it slightly acidic. It means coronavirus survive in acidic condition. Air is always acidic whether it is summer or winter, humidity is high or less. Only carbon dioxide concentration in air has important role on coronavirus. Humidity has slight effect to pH value of air. Now a days many countries started bleaching the infected area to kill the virus. The main ingredient in bleach is sodium hypochlorite (The pH value of 5% bleach solution is around 11). Soap solution has a pH value 9, also kill the virus. Thus any basic solution can kill the virus but experimental study needed to find out the minimum pH at which coronavirus died. In human body there are several organs which change their pH for their activity. It is well known fact that oxygen affinity of hemoglobin is the ability of hemoglobin to acquire and release of oxygen molecules into the fluid that surrounds it. This mainly depends on the pH value of blood. Besides that lung, liver, kidneys, muscle and other organs need definite pH to function. Coronavirus attack those organs where the pH values are compatible with coronavirus survival. If pH values of those organs are not suitable for its existence, then coronavirus tried to decrease the pH values of those organs.

COVID-19 has a size about 80-160 nm when enter into human body shows several symptoms like fever, cough, shortness of breath or difficulty breathing, chills, repeated shaking with chills, muscle pain, headache, sore throat and loss of taste or smell [4-7]. In human body several organs are pH dependent *i.e.* lungs, kidneys, stomach, blood, muscles, tongue (saliva) etc. need a particular pH for their functioning. The working pH value of lungs, kidneys, stomach, blood, muscle and tongue (saliva) are 7.38-7.42, 7.4, 1.5-3.5, 7.35-7.45, 7.1 (living) and 7.4 respectively. Symptom arises when the above mentioned pH values of that organs differ from its working pH value and the symptom become mild to severe depending on the amount of pH change. All the symptoms for coronavirus infection may be due to the pH change of different organs namely difficulty breathing due to blood pH change, muscle pain due to muscle pH change, loss of taste due to mouth (saliva) pH change and so on. It is very tough to study the properties of the 80-160 nm particles in terms of time and funding. If it is virus then the study become more challenging because of handling precautions and infection. Thus hypothesis receive greater interest for this type of study.

Good immune persons are not affected or affected with mild symptoms (asymptotic) but weaker immune persons are prone to be infected by coronavirus. To find the measurable term of immunity, pH measurement [8, 9] of different organs may help. Human mouth saliva has a pH in the range of 6.2-7.6 and the nasal mucosal has pH about 5.5-6.5, and increases in rhinitis to 7.2-8.3. Coronavirus will prefer entering through nose rather than mouth. Thus nasal mucus pH measurement have vital role for coronavirus infection and it may be a measurable entity to define low and high immune persons. Measurement of urine pH value also gives idea enrich the explanation. Human lungs can to accommodate 3-3.6 L air and the CO₂ concentration is about 4.5 volume %. This value changes when lungs does not work properly so it may be another measure of immunity of person. By measuring pH of different organs or CO₂ concentration in lungs will help to detect immunity of a person. Thus high immune and weaker immune persons can easily be differentiated. This differentiation might be helpful to overcome the possibilities of complete lockdown. .

In acidic pH, the coronavirus is alive and active but in basic pH it dies (as we wash our hand with soap to kill it). The scenario in blood is also same. Blood has a pH range 7.35-7.45 (slightly basic). The hypothesis is that, to stay alive in human body the coronavirus needs adequate pH value. When a human is infected by coronavirus, transfer a signal to cell to change blood buffer components. When coronavirus is able to change blood buffer components, acidosis occur (this type of acidosis is differ from three main root causes of reported metabolic acidosis *i.e.* increased acid production, loss of bicarbonate, and a reduced ability of the kidneys to

excrete excess acids). This explains the symptoms like shortness of breath or difficulty breathing and pneumonia. Thus there is a competition between coronavirus and immune system of human body to change the pH value. When human body immune system is able to keep the pH value of different organs intact then human body survive but when coronavirus is able to change the pH value of different organs, human dies. According to Bohr Effect, hemoglobin needs higher pH to pick up oxygen from lungs [10, 11]. As coronavirus decreases the effective pH value of blood (as sodium concentration decreased)so hemoglobin find difficult to bind oxygen (as hydrogen ion concentration increases at lower pH value thus CO₂ level in blood also increases and hemoglobin has less affinity to bind oxygen) in lungs. The conversion of dimer and tetramer form of hemoglobin is reversible at balanced pH value. Again when the pH value is more acidic (<6.5) the dimer form of hemoglobin further dissociate to monomer and then iron comes out from hemoglobin and deposited elsewhere.

When a person is exposed in coronavirus environment, actually the person's skin, eye, nose and mouth are exposed. The average pH value [12,13] of maximum body skin (human epidermis) is 5.5 except hand palm, hand dorsum, foot dorsum, plantar ball, arch and neck-upper back [13], where the pH values are more than 5.5 and more prone to infected by COVID-19. In accordance with protein molecules, may be the pH values of different parts of hand palms help coronavirus to enter into human system.

Those medicines which mainly keep the pH values of those organs intact to proper function give freedom from coronavirus. Researcher found that smoker is less prone to infect than non-smoker. Coronavirus is acidic in nature and died when it comes in contact with basic environment. Nicotine is a weak base (alkaloid) of a pKa value 8.0 and a half-life of around 2 hours. Thus in same coronavirus loading smokers get extra benefit than nonsmokers because basic nicotine will give extra protection for prevention. But nicotine is dangerous, can lead an increase in blood pressure, heart rate, flow of blood to the heart and a narrowing of the arteries. Instead of nicotine, NaHCO3 (one component in human blood buffer) can be used [2]. NaHCO₃ is not dangerous as nicotine but able to give extra protection when coronavirus enter through the nasal mucus and mouth. Thus those drugs which can maintain the pH values of all organs might be the answer of COVID-19. Thus a protocol of giving NaHCO₃ tablet/solution orally and

or injection for treatment of COVID-19 patients can be used for the betterment of patents condition or get rid of it. To keep sodium and potassium ions balanced in human body, a mixture of NaHCO₃ + KHCO₃ with proper ratio and dose may be given to protect further cell damage. It may lower the severity condition of patients and mortality can also be diminished even stop.

2. CONCLUSION

In conclusion author proposes a way to distinguish between the peoples of low and high immunity on the basis of measurements. This is converting immunity to a measurable quantity. Then it is easy to predict who should care more and who will go outside for work. This might be further helpful to overcome the possibilities of complete lockdown and people can still work for the betterment of country.

The pH value of freshly prepared aqueous solution of NaHCO₃ is 8.3 (0.1 molar) and \sim 9 (saturated solution). Both soap and NaHCO₃ solution have comparatively similar pH value and show similar performance on coronavirus. As NaHCO₃ is very cheap and less hazardous than soap and alcohol base sanitizer so this change will be economically profitable and environmentally safer (less hazard). NaHCO₃ solution can also be used as nasal drop and gargle solution for the protection of nose mucus and mouth saliva from coronavirus infection.

3. REFERENCES

- Garai A. Environmental Science: An Indian Journal, 2020; 16(3):114.
- Garai A, Gorai T. International Research Journal of Modernization in Engineering Technology and Science, 2020; 2(6):162.
- World Health Organization: Coronavirus disease (COVID-19) advice for the public (Last updated 29 April 2020).
- 4. Borges do Nascimento IJ, Cacic N, Abdulazeem HM, von Groote TC, Jayarajah U, Weerasekara I, et al. *J Clin Med*, 2020; **9:**E941.
- 5. Geier MR, Geier DA. *Medical Hypotheses*, 2020; **140**:109760.
- Kieliszek M, Lipinski B. Medical Hypotheses, 2020; 143:109878.
- 7. Derwand R, Scholz M. Medical Hypotheses, 2020; 142:109815.
- 8. Robinson JS. Brit. J. Anaesth, 1962; 34:611.
- 9. Cullen GE, Earle IP.J Biol. Chem., 1928; 76:565.
- 10. Riggs A. J Gen Physiol., 1960 Mar 1; 43(4):737.
- 11. Jensen FB. Acta Physiol. Scand., 2004; 182(3):215.
- 12. Draize JH. Jour. of Invest. Derm., 1941; 4:77.
- 13. Jolly HW, Hailey CD, Netick J. Jour. of Invest. Derm., 1960; **3:**305.