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SODIUM BICARBONATE DEFEATS CORONAVIRUS

Immunology

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ABSTRACT

Scientists emphasize that the human body must maintain a pH level between 7.35-7.45 to survive and function properly. Acidosis in the blood is characterized by a drop in pH to less than 7.35. Scientists also claim that the presence of acidosis in the blood facilitates virus entry into host cells, where it then thrives and replicates.

According to chemistry, when diluted in an acidosis aqueous liquid, sodium bicarbonate absorbs the H+ ions and produces water and carbon dioxide gas. As a result, it restores the liquid state to equilibrium.

Based on these findings, we propose a new strategy for combating coronavirus. Rather than using drugs or vaccination to combat the virus, this strategy involves depleting the virus's resources. We use sodium bicarbonate to achieve this by bringing the pH of the blood back to normal.

Athletes use sodium bicarbonate to improve their performance in a variety of exercises, confirming the safety of sodium bicarbonate on human bodies.

One important difference between sodium bicarbonate and drugs and vaccination is that sodium bicarbonate is given to covid-19 patients to cure them as well as non-patients to bring their pH level to equilibrium and thus neutralize the effects of viruses.

The current work is a solid scientific discovery; we recommend putting it through a clinical trial to determine the dosage of sodium bicarbonate required to cure each case. Its success could propel us to the forefront of the fight against SARS-CoV-2 and other viruses.

KEYWORDS

Covid-19, Sodium bicarbonate, Acidosis, Alkalosis, pH.

1 INTRODUCTION

An outbreak of coronavirus infectious disease (COVID-19) caused by the most recently discovered coronavirus (SARS-CoV-2) occurred in Wuhan City, China, in early December 2019. The World Health Organization declared it a Public Health Emergency of International Concern on January 30, 2020 [1]. The United States will reach the latest tragic milestone of 500,000 Covid-19 deaths on February 22, 2021 [2].

In this paper, we present a novel strategic approach to combating coronavirus. The strategy entails depleting the virus's resources rather than destroying it with drugs or improving the human immune system with vaccination. In this context, we investigate the relationship between metabolic acidosis and the pH level in the human body. According to scientists, viruses require an acidosis metabolism in order to enter cells and begin multiplying right away. Scientists are still trying to find a way to directly defeat coronavirus by developing drugs that can destroy the virus and stop its replication in cells as of the writing of this article. Vaccines can also be used to strengthen the body's immune system so that it can withstand virus attacks. The pH scale has a value range of 0 to 14. When the pH of a solution is 7, it is considered neutral. As the pH falls below 7, the solution becomes more acidic, and as the pH rises above 7, the solution becomes more alkaline.

Human blood requires an acid-base balance to function properly. The kidneys and lungs work together to provide a buffer system that maintains this balance. As a result of exhaling CO_2 from the body, the lungs can raise the blood pH. The kidneys reduce acidity by excreting hydrogen ions and producing bicarbonate, which helps to keep blood plasma pH within the desired range. Furthermore, protein buffer systems function within body cells [3]. This is known as the body buffer system, and it works to maintain the necessary acid-base balance.

According to scientists, administering sodium bicarbonate raises the pH level and, as a result, restores the body's acidosis condition to equilibrium. As a result, the virus is enclosed in an environment where it cannot survive.

We report from scientists in this work, and we only intervene at the end to build a compelling conclusion. The reader can consult [4] for a more in-depth review of sodium bicarbonate and its effects on viruses. Our findings confirm that sodium bicarbonate is effective against coronavirus, regardless of its variants.

It is worth noting that the current research is built on three pillars:

1. The first pillar is Ari Helenius' [5] research paper, in which he specifies acidosis extracellular fluid as a trigger for virus penetration into host cells.
2. The second factor is that acidosis causes an increase in the number of H^+ ions in the blood, which results in a drop in pH.
3. And the third is Engelking's [6] claim that sodium bicarbonate dissociates easily in aqueous solution, resulting in the addition of Na^+, $HCO\text{-}_3$, and H_2O to the extracellular fluid compartment. As a result, $HCO\text{-}_3$ molecules will react with H^+ molecules, producing carbon dioxide and water. As a result, the blood acidity is reduced.

The remainder of the paper is structured as follows: Section 2 claims that metabolic acidosis is an ideal environment for virus growth. Section 3 demonstrates that sodium bicarbonate can be used to treat acidosis metabolism. Section 4 demonstrates that sodium bicarbonate can pass through the stomach acidity and reach the bloodstream. Section 5 is a recommendation for a sodium bicarbonate clinical trial on covid-19 patients. Section 6 brings the paper to a close.

2 Metabolic acidosis is a convenient medium for growing viruses

Appropriate pH levels in and around living organisms and cells are essential for life on Earth. To survive, humans require a tightly controlled pH level in their blood serum in the range of 7.35 to 7.45 [7].

Acidosis is caused by an excess of acid in the body fluids. Acidosis develops when the body's buffer system fails to keep the pH level within the desired range. Many bodily processes, including drinks and food, produce acid. When the kidneys or lungs do not function properly, the amount of acid increases within the bloodstream. A liquid's pH value ranges from 0 to 14. When it is 7, the liquid is said to be neutral.

A pH greater than 7 indicates that the liquid is alkaline or basic. Acidosis is defined as a liquid with a pH less than 7. The ideal pH range for the human body is between 7.35 and 7.45, or slightly alkaline. However, if it exceeds 7.45, the body is said to be alkalosis. Both situations have the potential to cause diseases and infections in the body.

Each pH value has ten times the concentration of hydrogen ions compared to next value. For example, the number of H^+ ions in a liquid with a pH of 6 is ten times that of a liquid with a pH of 7. Acidosis can cause a variety of health issues, including death [8].

Helenius asserted in his valuable research paper [5] that most viruses, enveloped or not, use endocytic entry mechanisms to invade cells. A drop in pH level indicates that the extracellular fluid is acidosis and serves as a trigger for host penetration. A low pH also enhances the ability of some bacterial toxins to cause damage to host cells. Furthermore, it is well known that pH differences between compartments regulate cargo directional transport in the endocytic and secretory pathways. Helenius certifies that his understanding of endosomal entry of Semliki Forest virus (SFV) into host cells and the role of pH exceeds all his previous scientific accomplishments. SFV,

like SARS-CoV-2, is an enveloped virus.

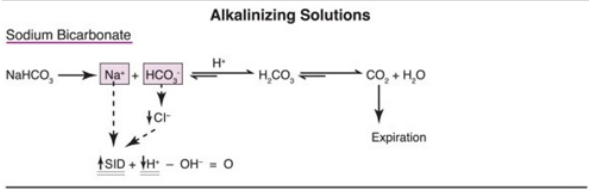
- Acidosis in the body is typically reflected by a drop in pH to less than 7.35.
- A drop in pH facilitates virus entry and replication in host cells. This is a very important fact that Helenius described in [5], saying that while he has had other accomplishments along his scientific path, the one involving endosomal entry of SFV and a drop in pH serving as a trigger for the virus to penetrate a cell host is very significant [5].

3 Sodium bicarbonate as a therapy

Sodium bicarbonate ($NaHCO_3$) is a crystalline chemical compound that can be produced industrially and is commonly known as baking soda. It has the ability to bring the pH level in the human body back to equilibrium, which is between 7.35 and 7.45.

The author of [6] claims that sodium bicarbonate has been used to treat patients with metabolic acidosis who have both a low plasma concentration and a pH of 7.2. Because $NaHCO_3$ is easily dissociated in aqueous solution, Na^+, $HCO\text{-}_3$, and H_2O are added to the extracellular fluid (ECF) compartment, as illustrated in Figure 1. In the ECF compartment, the weak base $HCO\text{-}_3$ tends to associate with Cl, and because Na^+ molecules are being added without Cl, both effects contribute to an increase in the strong ion difference (SID), resulting in alkalinization.

Furthermore, $HCO\text{-}_3$ acts as a buffer, allowing CO_2 and H_2O to be produced when combined with H^+. Although the Pco_2 rises by about 0.5 mmHg for every mEq/L increase in plasma HCO_3 concentration, this assumes that the lungs are in good health because these chemical interactions produce an excess of CO_2.



Alkalinizing Solutions (Figure 1) This image was taken from https://www.sciencedirect.com/ science/article/pii/ B97801239 1909 0500931.

Scientists also support the use of sodium bicarbonate in the treatment of certain diseases. It is used to treat metabolic acidosis, which can occur because of severe renal disease, circulatory insufficiency, uncontrolled diabetes, cardiac arrest, extracorporeal blood circulation, and severe primary lactic acidosis.

Sodium bicarbonate is also used to treat drug intoxications such as barbiturates, salicylate or methyl alcohol poisoning, and hemolytic reactions requiring urine alkalinization to reduce nephrotoxicity of hemoglobin and its breakdown products. To compensate for bicarbonate loss, patients with diarrhea can be given sodium bicarbonate.

In our studies, we are specifically treating coronavirus by removing extra acids from the blood. We are not addressing metabolic acidosis. This is a separate issue that, if possible, should be added to measures aimed at controlling the underlying cause of the acidosis. Despite this, bicarbonate therapy is recommended to reduce the risks associated with acidosis.

Strong bicarbonate treatment is required in some cases where a rapid increase in plasma total CO_2 content is critical, according to scientists [9]. Despite this, treating other types of acidosis necessitates first understanding their causes and then prescribing appropriate treatment [8].

The authors of [10] stated that acute metabolic acidosis, as manifested by a drop in extracellular and intracellular pH, can impair cellular function. Sodium bicarbonate has been added to the treatment of such a case, in addition to supportive measures.

Other researchers [11] recommend bicarbonate therapy for metabolic acidosis when the pH is as low as 6.9 to bring it back up to 7.2.

The author stated in [12] that the goal of their case study was to prevent SARS-CoV-2 from entering target cells by increasing the pH of the airways via sodium bicarbonate inhalation.

Furthermore, the review of [13] is about whether the effect of sodium bicarbonate on athletes' performance is dependent on exercise duration or not. They reported percentages of positive and negative effects on performance based on exercise type and duration. They concluded that baking soda has a positive impact on several exercises such as supramaximal exercise, high intensity intermittent activity, and skill-based sports. And, according to the American College of Sports Medicine, sodium bicarbonate is one of the most used substances for performance enhancement [14].

Athletes and people who engage in strenuous exercise use baking soda to help delay muscle fatigue and improve performance.

- Sodium bicarbonate regulates the pH level in the blood, restoring the proper balance of acidic and basic (alkaline) in the blood. As a result, it prevents viruses from entering and multiplying within cells. It is the primary regulator of acid-base balance at the extracellular level [15].
- Sodium bicarbonate has previously been used to treat acidosis [8], [9], and [10]. A recent study [12] reported that administering sodium bicarbonate inhalation form to four cases of COVID-19 patients to counteract the effect of low pH was successful.

Sircus [16] advised taking sodium bicarbonate 1-2 hours before or after a meal to avoid disrupting the stomach digestion process. Athletes use sodium bicarbonate to improve their performance in a variety of exercises, confirming the safety of sodium bicarbonate on human bodies.

4 Stomach high acidity and sodium bicarbonate

The normal volume of stomach fluid is 20 to 100 mL, and the pH is acidic (in the 1.5-3.5 range) [17]. People wonder how sodium bicarbonate gets past the high level of acidity and into the blood. It could react with stomach acid and be converted to carbon dioxide and water. The following non-exhaustive extractions demonstrate that sodium bicarbonate enters human blood.

The National Institute of Diabetes and Kidney Diseases states on its website [18] that drinking a solution of sodium bicarbonate or sodium citrate will lower the acid level in your blood for all types of Renal Tubular Acidosis.

According to the author of [19], a randomized double-blind crossover trial of 16 adult patients who took sodium bicarbonate and potassium citrate for three days each revealed a similar increase in urinary citrate excretion and urine pH. McKenzie confirms in [20] that urinary pH was significantly increased for those who took sodium bicarbonate in a clinical trial of 65 university students (14 female, 51 male).

5 Recommendations

The following is a suggestion for how to conduct a sodium bicarbonate clinical trial on covid-19 patients. Patients who are eligible for the clinical trial should have no problems with their lungs or kidneys. These two organs keep the pH balance in the body in check. More specifically, the lungs are present to expel extra CO_2 produced by the reaction of $HCO\text{-}_3$ and H^+ caused by the administration of sodium bicarbonate to patients.

The clinical trial may take one of the following forms:

1. Determine the pH level of the patients.
2. If the pH is less than 7.35, give sodium bicarbonate to the patient (amount to be specified by physicians). According to my experience, one teaspoon of sodium bicarbonate in a cup of water twice a day is sufficient to balance the pH level of the body.
3. Repeat steps 2 and 3 until the pH level reaches 7.35 to 7.45.
4. Keep track of the sodium bicarbonate dosage, pH changes, and the effects on the patient's condition.

The goal of such a trial is to first ensure that sodium bicarbonate is an effective cure for the covid- 19 pandemic, and then to determine the dosage that is appropriate for the patients' conditions.

In severe cases, intravenous sodium bicarbonate administration is an option to consider.

6 CONCLUSION

SARS-CoV-2 is an enveloped virus that causes Coronavirus (COVID-

19) disease. The acidosis state of the blood is its preferred environment, as it can easily enter and replicate within cells. The pH level of the human body must be between 7.35 and 7.45 in order to function properly. As the pH number falls below 7, the acidity of the blood rises, and the condition is known as acidosis.

Scientists are at war with SARS-CoV-2, and they have gone through direct virus destruction by prescribing drugs to kill the virus. Then they employ a different strategy of combat by boosting the human body's immune system through vaccination. In this work, we use a different strategy to combat the virus. Our strategy entails depleting the virus's resources by converting its preferred acidosis environment to an alkaline state. As a result, the virus is unable to enter cells or replicate within host cells, and it eventually dies. We show that the means to achieve such a goal are safe, inexpensive, readily available, and have already been used to treat other diseases. It's called sodium bicarbonate. Patients with covid-19 symptoms are given a teaspoon of sodium bicarbonate dissolved in a cup of water orally.

One important difference between sodium bicarbonate and drugs and vaccination is that sodium bicarbonate is given to covid-19 patients to cure them as well as non-patients to bring their pH level to equilibrium and thus neutralize the effects of viruses.

The current work is a solid scientific finding that is being pursued by health authorities to determine the dosage of sodium bicarbonate required to cure each individual case. Its success could propel us to the forefront of the fight against SARS-CoV-2 and other viruses.

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