Viruses are pH Sensitive

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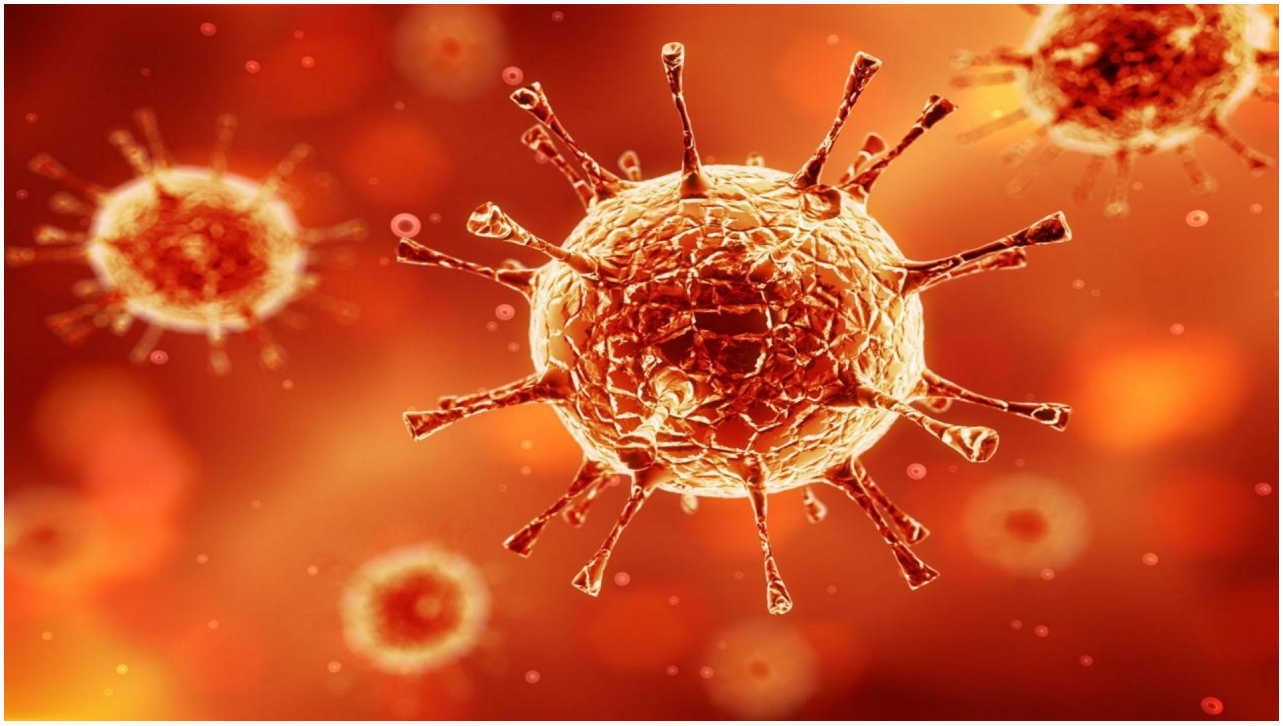

There are certain important subjects that doctors and world health officials do not want you to know about. The fact that most viruses and all physiological processes in the body are pH sensitive is one of them. Despite the fact that pH medicine offers us a key to treating viral infections that is easy, safe and inexpensive, they and even alternative health care providers just cannot wrap their heads around baking soda as one of the most important medicines we can use to fight the coronavirus.

Researchers at the Massachusetts General Hospital (MGH) in the US have uncovered the 'Achilles' heel' of most viruses which plague mankind are on target, there are vulnerabilities that can be exploited but what they are looking at is not practical or helpful in our fight against viral infections. The so-called 'Achilles heel' (or vulnerable point) of most viruses can be exploited by pulling the pH rug out from under them.

The ability of influenza virus to release its genome under different acidic conditions is linked to the transmission of influenza virus. The threshold pH at which fusion is first observed can vary among different serotypes of membrane protein hemagglutinin (HA) and may correlate with virulence. The acid stability of HA has been linked to the successful transmission of virus between avian and human hosts.

Coronavirus infectivity is exquisitely sensitive to pH. For example, the MHV-A59 strain of coronavirus is quite stable at pH 6.0 (acidic) but **becomes rapidly and irreversibly inactivated by brief treatment at pH 8.0 (alkaline)**. Human coronavirus

strain 229E is maximally infective at pH 6.0. Infection of cells by murine coronavirus A59 at pH 6.0 (acidic) rather than pH 7.0 (neutral) yields a tenfold increase in the infectivity of the virus.

Data suggests that the coronavirus IBV employs a direct, low-pH-dependent virus-cell fusion activation reaction. "Fusion of the coronavirus IBV with host cells does not occur at neutral pH and that fusion activation is a low-pH-dependent process, with a half-maximal rate of fusion at pH 5.5. Little or no fusion occurred above a pH of 6.0."

Raising pH (to an alkaline state) increases the immune system's ability to kill bacteria, concludes The Royal Free Hospital and School of Medicine in London. The viruses and bacteria which cause bronchitis and colds thrive in an acidic environment. Keeping our pH in the slightly alkaline range of 6.8-7.2 can reduce the risk and lessen the severity of colds, sore throats and bouts of influenza.

When we thoroughly add alkalinity we invariably have mild attacks of viral infections and the same is true for bacterial and fungus infections. There is significant decrease in median number of colony forming bacteria and fungi in the lungs of pneumonia patients when sodium bicarbonate is used compared to saline.

Medical scientists have already concluded that a 8.4% solution of bicarbonate is safe inhibitory drug for respiratory bacterial, fungal, and mycobacterial growth. Slow infusions of $NaHCO_3$ (bicarbonate) can also be used to treat non-anion gap metabolic acidosis and some forms of increased anion gap acidosis, a common enough problem in ICU patients with serious lung infections.

Viruses infect host cells by fusion with cellular membranes at low pH. Thus they are classified as "**pH-dependent viruses**." Drugs that increase intracellular pH (alkalinity within the cell) have been shown to decrease infectivity of pH-dependent viruses. Since such drugs can provoke negative side effects, the obvious answer are natural techniques that can produce the same results. There is no pharmaceutical that can compete with sodium bicarbonate for changing the pH of the bodies fluids.

Fusion of viral and cellular membranes is pH dependent. "Fusion depends on the acidification of the endosomal compartment. Fusion at the endosome level is triggered by conformational changes in viral glycoproteins induced by the low pH of this cellular compartment."[1] In membrane biology, fusion is the process by which two initially distinct lipid bilayers merge their hydrophobic cores, resulting in one interconnected structure. It has been suggested that the hepatitis C virus (HCV) infects host cells through a pH-dependent internalization mechanism. This HCVpp-mediated fusion was dependent on low pH, with a threshold of 6.3 and an optimum at about 5.5.[2] When pH drops to 6 or below, rapid fusion between the membranes of viruses and the liposomes occurs.

Takeda Pharmaceutical is joining Gilead Sciences and AbbVie as the latest drugmaker to work on developing a coronavirus vaccine. The experimental drug would be derived from the blood of coronavirus patients who have recovered from the respiratory disease. "While *we don't know for sure that it will work*, we think it's definitely a relevant asset that could be of help here," said Dr. Rajeev Venkayya, president of Takeda's vaccines business. pH medicine will definitively work because viruses are pH dependent and sodium bicarbonate is available everywhere and costs almost next to nothing. In hospitals bicarbonate is easily administered intravenously.

Inhibition of vesicular stomatitis virus (VSV) replication in LB cells by interferon (IFN) is pH sensitive. Using sensitive intracellular pH (pHi) indicators, researchers found that IFN treatment significantly raised the pHi. The increase in pHi correlated with an enhancement of the antiviral activity of IFN by primary amines. These results indicated that the IFN-induced increase in pHi may be responsible for the accumulation of G in the TGN, thereby producing G-deficient virus particles with reduced infectivity.[3]

Solar light is another important factor producing viral inactivation, through the action of UV radiation. Viruses survive better in the dark than when exposed to sunlight.

The foot-and-mouth disease virus (FMDV) capsid is highly acid labile and tends to dissociate into pentameric subunits at acidic condition to release viral RNA for initiating virus replication.

Understanding Cell Voltage, pH and Oxygen Levels

Wherever the body has low voltage, the cells begin to have problems that get more serious the lower the voltage (pH) goes. **The lower the voltage goes, the lower the pH goes, and the lower oxygen levels go, and that means CO2 levels are going south as well. Chronic disease is associated with loss of voltage, lower pH values (acid conditions), as well as low O2 and CO2 levels. This means that alkaline tissues have more oxygen in them.**

Wherever the body becomes acidic, voltage drops as does tissue oxygen levels. What is pH after all? It is ultimately a measure of redox potential. Redox potential is a measure of whether electrons are available in surplus (and thus are "electron donors") or whether electrons are deficient (and thus are "electron stealers"). Electrons are necessary for life and are needed for health and in high quantities for healing and the growth of new cells.

Dr. David Brownstein wrote, "The human body is constantly removing old and injured cells and replacing them with healthy new cells. **This process can only occur if the voltageof the cells is maintained at an optimal level.** This process works more effectively when we are young as compared to when we are older. **In the body (or in a solution), voltage is a directreflection of pH**, which is a measure of the degree of

acidity or alkalinity of a solution, measured on a scale of 1 to 14. **The human body's pH level is a direct reflection of its voltage.** A low pH reading (highly acidic) indicates a low voltage state. Conversely, a high pH reading (highly alkaline) means a high voltage state."

The amount of oxygen in cells is determined by voltage. If a cell has adequate voltage, it will also have adequate oxygen. If cellular voltage is low, the amount of oxygen in the tissues will be low. This applies to metabolism as well. When voltage and oxygen are low, metabolism becomes anaerobic, which means that oxygen is unavailable.

What's Happening

[1] Viral membrane fusion: is glycoprotein G of rhabdoviruses a representative of a new class of viral fusion proteins? Braz J Med Biol Res ;vol.38 no.6; Ribeirão Preto June 2005; http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0100-879X2005000600002

[2] Hepatitis C virus glycoproteins mediate low pH-dependent membrane fusion with liposomes; Lavillette D et al; J Biol Chem. 2006 Feb 17;281(7):3909-17. Epub 2005 Dec 15; http://www.ncbi.nlm.nih.gov/pubmed/16356932