[Exploration of Plausible] COVID 19 Therapy by Laser Treatment

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Abstract

[The author's] equations describe chemical reactions that are influenced by light variables. [These] equations are equations that link chemistry, laser, and thermodynamics, they link the properties of a photon with the properties of the matters. They contain concepts such as enthalpy, free energy, and Gibbs energy that control any chemical reaction. Since the replication mechanism of the Corona virus is gust chemical reactions in laser considerations, then we can jam these reactions and create side reactions that kill the virus. Enzymes are highly organized materials, have specific jobs to do, any jamming will end up to death. Conversely, Gibbs energy (reaction enthalpy) is powerfully influence reaction, even organized reactions of enzymes, so anything change this Gibbs will effect reactions, photon lastly found his pathway to interfere reactions through [these] equations. [In] this paper, I began introduce COVID 19 virus, its behavior, pathogenicity through its RdRP enzymes, how this enzymes built up and how does it work. Next I introduced my equations and its relations with photon, chemical reactions, and then built a coherent idea about using laser to affect enzymes reactions.

2019-nCoV definition and pathogenicity[2]:[3]

The 2019-nCoV or (COVID 19) is member of Coronaviridae family, of enveloped, positive-sense, single-stranded RNA viruses. The viral genome is 26–32 kilobases in length. The particles are typically decorated with large (~20 nm).

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), previously known by the provisional name 2019 novel coronavirus (2019-nCoV), is a positive-sense single-stranded RNA virus. It is contagious in humans and is the cause of the ongoing pandemic of coronavirus disease 2019 (COVID-19) that has been designated a Public Health Emergency of International Concern by the World Health Organization (WHO).

SARS-CoV-2, another name, has close genetic similarity to bat coronaviruses, suggesting it emerged from a bat-borne virus. An intermediate animal reservoir such as a pangolin is also thought to be involved in its introduction to humans. From a taxonomic perspective, SARS-CoV-2 is classified as a strain of the species severe acute respiratory syndrome-related coronavirus (SARSr-CoV).

COVID 19 is (+) ssRNA virus:

A positive-sense single-stranded RNA virus (or (+) ssRNA virus) is a virus that uses positive sense single stranded RNA as its genetic material. Single stranded RNA viruses are classified as positive or negative depending on the sense or polarity of the RNA. The positive-sense viral RNA genome can serve as messenger RNA and can be translated into protein in the host cell. Positive-sense ssRNA viruses belong to Group IV in the Baltimore classification. Positive-sense RNA viruses account for a large fraction of known viruses, including many pathogens such as the hepacivirus C, West Nile virus, dengue virus, SARS and MERS coronaviruses, and SARS-CoV-2 as well as less clinically serious pathogens such as the rhinoviruses that cause the common cold.

Pathogenicity through Replication:

Positive-sense ssRNA viruses have genetic material that can function both as a genome and as messenger RNA; it can be directly translated into protein in the host cell by host ribosomes. The first proteins to be expressed after infection serve genome replication functions; they recruit the positive-strand viral genome to viral

[2] Wikipedia.

[3] The extent of accuracy of this information is doesn't matter because whatever virus' enzymes behave, laser will deal with it as a chemical reaction, so interfering with this reactions laying under photochemical reaction concept, so all we need gust jamming this reactions and that what Ali's equations describe.

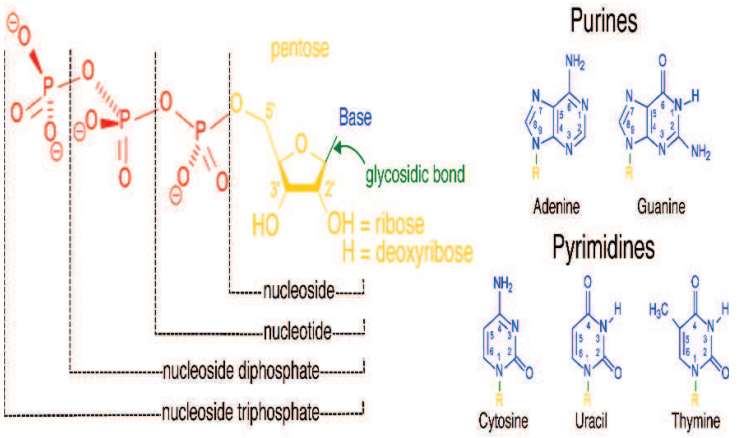
replication complexes (VRCs) formed in association with intracellular membranes. VRCs contain proteins of both viral and host cell origin, and may be associated with the membranes of a variety of organelles, often the rough endoplasmic reticulum, but also including membranes derived from mitochondria, vacuoles, the Golgi apparatus, chloroplasts, peroxisomes, plasma membranes, autophagosomal membranes, and novel cytoplasmic compartments. The replication of the positive-sense ssRNA genome proceeds through double-stranded RNA intermediates, and the purpose of replication in these membranous invaginations may be the avoidance of cellular response to the presence of dsRNA. In many cases subgenomic RNAs are also created during replication. After infection, the entirety of the host cell's translation machinery may be diverted to the production of viral proteins as a result of the very high affinity for ribosomes of the viral genome's internal ribosome entry site (IRES) elements; in some viruses, such as poliovirus and rhinoviruses, normal protein synthesis is further disrupted by viral proteases degrading components required to initiate translation of cellular mRNA.

All positive-sense ssRNA virus genomes encode RNA-dependent RNA polymerase (RdRP), a viral protein that synthesizes RNA from an RNA template. Host cell proteins recruited by positive-sense ssRNA viruses during replication include RNA-binding proteins, chaperone proteins, and membrane remodeling and lipid synthesis proteins, which collectively participate in exploiting the cell's secretory pathway for viral replication.

RNA-dependent RNA polymerase (RdRP, RDR):

RNA-dependent RNA polymerase (RdRP, RDR) or RNA replicase is an enzyme that catalyzes the replication of RNA from an RNA template. This is in contrast to a typical DNA-dependent RNA polymerase, which catalyzes the transcription of RNA from a DNA template.

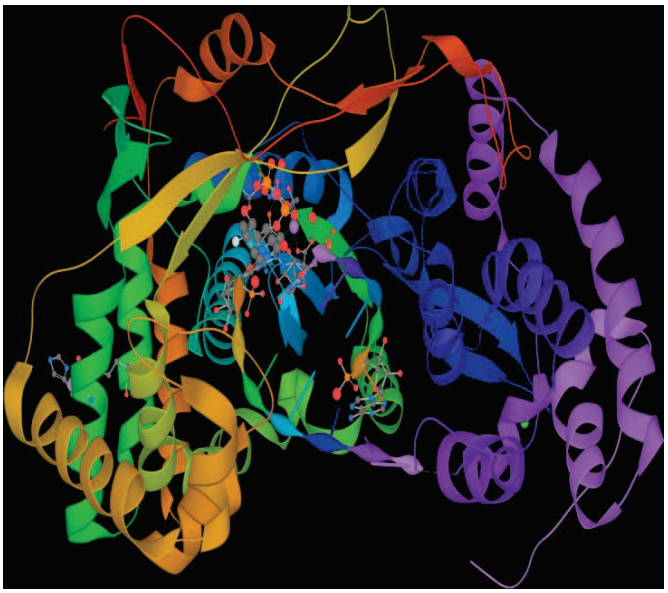
RdRP is an essential protein encoded in the genomes of all RNA-containing viruses with no DNA stage i.e. only RNA viruses. It catalyses synthesis of the RNA strand complementary to a given RNA template. The RNA replication process is a two-step mechanism. First, the initiation step of RNA synthesis begins at or near the 3' end of the RNA template by means of a primer-independent (de novo), or a primer-dependent mechanism that utilizes a viral protein genome-linked (VPg) primer. See the below figure. The de novo initiation consists in the addition of a nucleoside triphosphate (NTP) to the 3'-OH of the first initiating NTP. During the following so-called elongation phase, this nucleotidyl transfer reaction is repeated with subsequent NTPs to generate the complementary RNA product.



The viral genome is composed of RNA, which enters the cell through receptor-mediated endocytosis. From there, the RNA is able to act as a template for complementary RNA synthesis, immediately. The complementary strand is then, itself, able to act as a template for the production of new viral genomes that are further packaged and released from the cell ready to infect more host cells. The advantage of this method of replication is that there is no DNA stage; replication is quick and easy. The disadvantage is that there is no 'back-up' DNA copy.

Structure

Viral RNA-directed RNA polymerases, along with many single-subunit DNA-directed polymerases, employ a fold whose organization has been likened to the shape of a right hand with three subdomains termed fingers, palm, and thumb. Only the palm subdomain, composed of a four-stranded antiparallel beta sheet with two alpha helices, is well conserved among all of these enzymes. In RdRP, the palm subdomain comprises three well-conserved motifs (A, B, and C). Motif A (D-x(4,5)-D) and motif C (GDD) are spatially juxtaposed; the aspartic acid residues of these motifs are implied in the binding of $\mathbf{Mg}^{+2}$and/or $\mathbf{Mn}^{+2}$+. The asparagine residue of motif B is involved in selection of ribonucleoside triphosphates over dNTPs and, thus, determines whether RNA rather than DNA is synthesized. The domain organization and the 3D structure of the catalytic centre of a wide range of RdRPs, even those with a low overall sequence homology, are conserved. The catalytic centre is formed by several motifs containing a number of conserved amino acid residues.



How can Ali's equations help[4]?

Ali's equation are chemical-mathematics equations, that relate chemical reactions and its parameters like Enthalpy, Equilibrium constant, and Gibbs energy with laser parameters like wavelength and intensity, it is written as fellow:

$$\frac{-\Delta H}{\Delta nRT} = ln\left(\frac{P^{\ominus}h\xi\kappa}{Rk_bT^2}\right) + \frac{\upsilon h^2}{2kT\mu\lambda^2\sqrt{nc\varepsilon_0}}\sqrt{I}$$

$(\Delta H)$is the enthalpy for chemical reaction (here enthalpy of protein denaturation)
$(\mathrm{k_b})$ is boltizmann constant.
(r) is the radius between nucleus and electrons clouds.
$(\mathrm{n}, \mathrm{c}, \varepsilon_0)$ are refractive index, light speed, and vacuum permittivity respectively.
(Δn) in the denominator is the number of moles.
(R) is the gas constant.
(z, e) are number of valence electrons and charge.
(I) photons intensity.
(T) temperature.
(λ) wavelength.
(h) Plank's constant.
$(\mathrm{P}^{\ominus})$ stander pressure.
(ln) natural logarithm.

It is known that the term Enthalpy (ΔH) is the heat or energy needed to form or dissociate compounds, it is thermodynamics' concept. So this energy can be considered one of the properties of the compound, but of course it is not absolute characteristic of this compound but many compounds sharing with it.

And since the enthalpy carries some of the properties of the compound, then what do we expect it to be if we add another term to it that also carries the properties of the compound surely this will raise the quality of the equation above, consider the above equation especially the term $\boldsymbol{\upsilon}$ which represents electronic transitions from a lower energy level to the energy level that the compound disintegrates, It converts to any other compound, so from the above equation and dividing all sides by $\boldsymbol{\upsilon}$ we get:

$$\frac{-\Delta H}{\upsilon\Delta nRT} = ln\left(\frac{P^{\ominus}h\xi\kappa}{Rk_bT^2}\right)/\upsilon + \frac{\mathrm{h}^2}{2\mathrm{kT}\mu\lambda^2\sqrt{\mathrm{nc}\varepsilon_0}}\sqrt{\mathrm{I}}$$

[4] See ref. 1 or 3

Now we can say this equation is more reliable to regard as a compound characteristic, because of the term $\frac{\Delta H}{\upsilon}$ which represents the energy (here we say photon characteristics like energy and intensity) needed to raise covalent electrons in the compound from certain orbitals to reaction orbitals.

Now return to RdRP enzyme:

From RdRP structure and mechanism we can dedicate laser with certain wavelength and intensity according to the above equation, that laser can raise the covalent electrons in $\mathbf{Mg^{+2}}$ and $\mathbf{Mn^{+2}}$(enzyme active side that cleave mRNA to synthesize cRNA), through this effect the enzyme will lose its major task and many uncontrolled reactions will raise because of the influence of the below equation:

$$\mathbf{K_2 = \kappa\xi\, e^{\frac{\upsilon h^2}{2kT\mu\lambda^2\sqrt{nc\varepsilon_0}}\sqrt{I}}}$$

This equation also is mine[5], it describes any kind of reactions will raise proportion with intensity and wavelength of laser, it is implies that if we adjust a laser device to certain wavelength and intensity, we can disrupt enzyme task by raising uncontrolled reactions lead to irreversible enzyme denaturation.

How to overcome the attenuation and collateral reactions?

First of the all, this idea must applied while virus replication inside human body, especially lungs.

If we speak about laser that means photon, then the term attenuation must be present, how can we avoid it. Ali's equations deal with photon energies and intensities so attenuation must be forthright.

To avoid attenuation it cost technique consideration, let me introduce the expression (co-central radiation), this term define a technique that avoid so-called (light line linear reactions) reaction that happed straightforward when high density laser cross the human body. The idea is putting along circle circumference huge numbers of laser diodes (radiate tiny intensities of laser) sharing a common center, this center projects the infected

[5] See 3 to 11

lung preferably the infected surface on the lung, so we can gain a powerful influence and lessen collateral-unwanted damages. See the left figure.

Conclusion:

On conclusion I want to say, laser – especially high density- could be controlled by Ali's equations, not gust high density, also low density did.

This idea could implemented on infections, tumors, and could be instead of radiotherapy. If we know the suitable quantities and energies of light for influence any reaction, it will be easy to ignite that reaction.

Co-centered radiation technique could save uncontrolled reactions that lead to harm human body, to do that we could adjust diodes to radiate low quantities of laser and then they meet on the center to fulfil their anticipated work.

Finally I apologize the weak language, and rush on introducing this paper, and I sure that you get my idea because it is very simple. I ask my lord Allah put his pace and blessing and forgive us.

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