

COVID 19 – Preparedness to Face the Dominant Biology

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Abstract

Covid-19, the threatening pandemic is consuming lives each day. The dominant biology took an edge over the humans by mere survival for billion years. A vast number of drugs in the current market are plant based derivatives. Plant based vaccines and research are hardly any that turned our attention. Studies on antiviral immune mechanisms of plants need to be geared up. Complexities exist in plant based vaccine preparation but it's never a pipe dream.

Keywords: Dominant biology; COVID-19; Plant based vaccines; Antiviral drugs; Immune mechanisms; Plant -viral interactions

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Introduction

The ongoing catastrophic battle between the sapiens and COVID 19 - the novel coronavirus is one of the “incredible hit” that humans ever face. The virus resulted in a pandemic as it spread swiftly. WHO issued COVID 19 as a public health emergency of international concern on January 30, 2020 [1]. The current problem is a global burden. Travelling back to look at the major events that happened in the earth might help us to understand this current pandemic as a dominant biology rather than a disease outbreak.

Theories depicting the origin of life predict that life could have originated from the last universal common ancestor (LUCA) about 4 billion years ago and viruses would have originated along with or even before LUCA [2]. Viruses are obligate intracellular parasites that are dependent on microbes for survival and hence infect them. Later viruses envied on hosts such as plants, animals and humans in their order of origin respectively.

Since the plants and animals originated billions of years ago and we are just 0.2 million years old now [2], the viral interactions with plants and animals could have been there for quite a long time. So the question is do plants and animals have better antiviral immune mechanisms than us? Many drugs that are in current use are plant based derivatives. Hydroxychloroquine is an herbal derivative which is shown to inhibit COVID 19 *invitro* [3]. Combating the virus for a long time through evolution, plants still survive by natural selection and hence exploring plant virology might give more insight into the current scenario.

Plants possess natural resistance against viral infections. RNA viruses infect plants and RNA silencing is an immune mechanism adapted by plants to encounter viruses [4]. More studies are necessary to reveal plant and viral interactions which may be a sixth sense to know the applications of plant based derivatives as antiviral drugs.

Though plant based vaccine research started almost 30 years back, there is no approved human vaccine available in the market. Many studies struggled to reach clinical trials and only a very few have just marked phase II and III [5]. The complexity in developing plant based vaccines include good manufacturing practices, cost of greenhouse cultivation, effective and consistent immune response and extensive knowledge in antigen -host plant interactions [6], yet in June 2018, Medicago-a bio pharmaceutical company claimed that a quadrivalent influenza vaccine is expected to reach the market in 2020-21 after completing the phase III trials [7].

Discussion

Studies on plant viral interactions to tackle pandemic flu remains need of the hour and in the highest sense. Various natural paths of resistance by the immune system and resistant genes were also identified in plants [4]. Plant Species such as *dioscorea*, *phyllanthus*, *eclipta*, *astragalus*, *boerhavia*, and *andropholis* are proven to have antiviral, antibacterial and analgesic properties [8]. The above mentioned plants and many more species are present diversified across the world.

Research on plant viral interactions would aid in identifying right plant hosts, performing large scale clinical trials and adhering to GMP products. Challenges exist in preparing plant based vaccines, yet the time conservation compared to egg based vaccines and production of virus like particles forecast a possibility of developing quick and safer vaccines respectively in the near future respectively [9,10]. The author believes that the prospects of medicinal plant research are limitless and we are not far to traverse, of course with a giant leap over the existing lacunae.

Conclusion

The Spanish flu in 1918 took a million lives. We travelled a century further with phenomenal advances in health science and despite entering into the bargain with the novel coronavirus today. Virus,

being a strong survivor in the process of natural selection, has adapted and evolved through peculiar mutations. Survival of the dominant organism had led to the current threat with a 30 kb genome. The dominant biology may have more power over humans and it's high time to initiate high quality research on plant- viral interactions with a pinch of knowledge on evolutionary science to battle the current pandemic and future perils.

Acknowledgement

None.

Conflict of Interest

None.

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