

Letter to Editor

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Indian will remain relatively safer from COVID-19 due to government measures and food habits in India: Will not enter stage-3 & stage-4

Abstract: A unique genetic makeup, rich traditional uses of Indian medicinal plants and traditional foods by different communities in India will not let the corona virus multiply in the body and body's immune system will kill the viruses.

This report has been intended to present impact of COVID-19 in India and health implications on Indian populations.

India will remain safer relatively from menace of COVID-19 largely due to reasons described in text.

1. Swift and robust measures by Central and state governments:

Indian government's swift action started as early as on January 17, 2020. WHO said on 24 January, that COVID-19 won't be an emergency, which turned out to be major failure of WHO expertise. But Indian government visualizing the threat acted using its wisdom and took drastic measures to control the virus with multipronged strategies. Modi government wasted no time and started screening of passengers, potential carriers of coronavirus, at all international ports in India.

The screening of passengers from China had begun on January 17 and was later expanded to cover another 13 affected countries but with the detection of 39 cases, the government has escalated the preventive

measures at all airports. Till 14th Feb, only passengers arriving from four countries -- China, Hong Kong, Thailand and Singapore -- were being screened for possible exposure to the respiratory virus at 21 identified airports in India. And later, applied to all the flights arriving from all the countries. All domestic airlines were barred from flying from 24 March and all international flights were suspended from 22nd March. By 4 March, Government of India had screened as many as 6, 11, 167 passengers and by the end of March, Government screened a whopping 15, 24, 266 number of passengers at all Indian ports of entry.

In an unprecedented move, the railways also announced the suspension of all its passenger services from March 22 midnight amid the coronavirus pandemic. Movement of around 25 million people daily by railways was stopped where several hundred thousand people could have been infected through contacts. Railway stations and trains are among the most crowded places where chances of infection through human contact were very high. Country announced total lockdown for 21 days from midnight of 25 March. Thus, vast number of 135 million of dynamically moving people who could be potential spreaders and infected with coronavirus were brought to sudden halt. The chances of infected persons acting like

asymptomatic excretors and like a chain reaction were put on immediate brake. All above measures worked like graphite rods to retard thermal neutrons, which were responsible for nuclear chain reaction in a nuclear reactor. Had these measures not been adopted, the coronavirus would have exploded like a nuclear bomb in the second most populated country in world, surpassing cases manifold compared to USA, Italy, Spain and other countries. It has saved and would further save millions of lives with stringent steps taken at a lightning speed. Prime Minister Mr. Narendra Modi deserves Nobel Prize for peace for saving millions of lives through his great political acumen and decisiveness ability. His measures will pull millions of families out of danger who would have had otherwise drowned in tears due to losing their loved ones. His measures will help break the cycle of corona virus one hand, on the other hand, all confirmed cases of COVID-19 would surface and taken by robust and alert medical team for treatment. Thus, halting all railways, all flights, state buses and total lockdown for 21 days would prove highly beneficial in controlling COVID-19.

Apart from the center, state governments like Delhi, Punjab, Uttar Pradesh, Haryana and others became vigilant equally and took several measures to control dreaded spread of COVID-19. All states wholly supported measures of central government and showed great practical approach at the time of national crisis.

2. Herd Immunity

The genetic constitution of Indian sub-continent population is unique. It has

evolved in such geographical conditions that grants population more robust immune system. It is this immunity that kills any foreign invasion in the body including viruses and novel viruses. The Indian population is exposed to varied antigens including various strains of flu viruses, herpes simplex viruses, hepatitis viruses in atmosphere and makes B-cells to do class switching to produce more varied immunoglobulins and initiate cell mediated immunity. Immunity developed against different viruses also to some extent protected people from COVID-19. There are many behavioral similarities between Herpes simplex virus strains and COVID-19. Both are highly contagious; both have route of infection through eyes, nose and mouth; both are asymptomatic excretors; both attack immune-compromised population (especially elderly people) and both cause respiratory infections leading to pneumonia disease. Exposed to such varied antigens, there is tremendous generation of diversity of antibodies. It is like natural vaccination of the population. The overall effect is such that it makes body prepared for even novel types of antigens including novel corona virus disease COVID-19. Thus, studies on genetic makeup of Indian population have proven that it is favoring strength of immune system. It should not be confused with immunological disorders in Indian population, which does not warrant mention here.

According to Indian Genome Variation Consortium (IGVC) in 2008, “while it wasn’t surprising to find similarities in the genetic profiles of people living in opposite corners of the country, considering the

tremendous number of migrations throughout Indian history, most groups maintain their genetic uniqueness, unlike populations in the United States or Europe". Scientists here have completed a study mapping the genes of various ethnic groups in India, the largest such study on any population anywhere in the world that shows which groups are susceptible to which diseases and responsive to which medicines. According to this study, people in parts of Punjab, Haryana and Kashmir have a natural immunity to HIV/AIDS. Council of Scientific and Industrial Research, the **Indian Genome Variation Consortium** (IGVC) including at least 150 scientists has mapped nearly 1,871 human genomes, sourced from 55 endogamous (pertaining to a community, clan or tribe) populations.

In another study published in *Nature India*, August 2008, an Indo-US team of researchers has found that Indians, compared to other world populations, carry more of a kind of natural killer cells that can detect and terminate infections at an early stage. Research suggests that Indians acquired the activating KIR (killer cell immunoglobulin-like receptors) genes as a result of natural selection to survive the environmental challenges during their pre-historic coastal migrations from Africa. White blood cells, or leukocytes, are cells of the immune system defending the body against disease by identifying and killing pathogens and tumor cells. The main types of WBC are T lymphocytes, B lymphocytes, macrophages, neutrophils and natural killer cells. The defense in the first week of infection is mediated primarily by macrophages, neutrophils and natural killer

cells. In most cases, these cells do a great job of keeping people healthy and preventing infections. If the infection is not contained by the first week, the T and B lymphocytes will initiate more specific and strong defense. White blood cells, or leukocytes, are cells of the immune system defending the body against disease by identifying and killing pathogens and tumor cells. The main types of WBC are T lymphocytes, B lymphocytes, macrophages, neutrophils and natural killer cells. The defense in the first week of infection is mediated primarily by macrophages, neutrophils and natural killer cells. In most cases, these cells do a great job of keeping people healthy and preventing infections. If the infection is not contained by the first week, the T and B lymphocytes will initiate more specific and strong defense (*Nature India*, August 2008).

According to one more evidence, people of African ancestry generally show stronger immune responses than Europeans do. The discovery suggests that European populations have been selected to display reduced immune responses since our ancestors first made their way out of Africa. Intriguingly, the immune systems of Europeans were partly shaped by the introduction of new genetic variants through interbreeding between some of our early European ancestors and Neanderthals. Two studies reported in *Cell* on October 20, 2016 show that those differences in disease susceptibility can be traced in large part to differences at the genetic level directing the way the immune systems of people with European and African ancestry are put together (Quach et al., 2016).

3. Indian Food Habits

Indian population is largely vegetarian and user of traditional foods in their diet. India is agriculture based country and user of fresh vegetables mostly. Very less number of population is dependent on processed and frozen products. The processed and frozen food does not favor body's immunity whereas fresh vegetables affects immune system more favorably. It suppresses pro-inflammatory cytokines like TNF-alpha and Interleukin-1 (IL-1) and promotes anti-inflammatory cytokines like interferons and IL-4. Our diets rich in anti-oxidants lignans, flavonoids, polyphenols, triterpenes and essential fatty acids like Alpha Linolenic Acid (ALA) etc. reduce oxidative stress in the body and acts on immune system to activate it favorably. For example, lignans and ALA act together on membrane phospholipids and alters in such a way that viruses cannot penetrate through the membrane including membrane of respiratory tract. As COVID-19 is an example of zoonotic transmission it might be attacking more on people whose diet is rich in meat and especially beef and pork and do not have much anti-oxidants like lignans, flavonoids, polyphenols, triterpenes etc. As basis of any infection is host-parasite relationship, people dependent more on meat diets and with less plants based anti-oxidants may attract more infection. According to a research published by Sarkar *et al.* (2015), traditional Indian foods have been prepared for many years and preparation varies across the country. Traditional wisdom about processing of food, its preservation techniques, and their therapeutic effects have been established for many generations

in India. Food systems can deliver numerous biological functions through dietary components in the human body. Indian traditional foods are also recognized as *functional foods* because of the presence of functional components such as body-healing chemicals, antioxidants, dietary fibers and probiotics. These functional molecules help in weight management, and blood sugar level balance and support immunity of the body. The functional properties of foods are further enhanced by processing techniques such as sprouting, malting, and fermentation (Hotz & Gibson, 2007). Many traditional foods are good sources of flavonoids, minerals, vitamins, carotenoids, electrolytes and other bioactive compounds that have impact on human health. (Sarkar *et al.*, 2015).

4. Traditional Practices of Herbal medicines

About 80% of Indian population uses traditional medicines routinely for ailments like flu, cough, fever, headaches, pain, inflammation, diarrhea etc. Traditional medicines include ginger, turmeric, clove, long pepper, cinnamon, nutmeg, holy basil, black peppers, brahmi, shankhpushpi, kali museli, safed museli, mentha, ajwain, rai, anant mool, Giloe and many more. Such traditional medicines influence immune system favorably and fight with infections. As mentioned above, these traditional medicines are rich in anti-oxidant properties and germicidal. Many traditional food items like flaxseeds, sesame seeds, Arabica gum etc. are made in to different kinds of preparations and eaten routinely in many parts of the country. People in different parts

of country have evolved their own food habits those promote good health and immunity. Thus, a rich traditional use of Indian medicinal plants by different communities will not let the coronavirus multiply in the body and body's immune system will kill the viruses. Uses of medicinal compounds like Loban, Kapur, Gugal, Lawang, Dhup, Til etc. in Puja-Havan has been listed in Ayurveda as respiratory disinfectants. It acts as sanitizer for respiratory tract from nostrils to lungs. There may be nationwide massive havan in different communities to stop corona infecting respiratory tract. It is being reported now that in Wuhan (China), all COVID-19 infected patients were treated with Traditional Chinese Medicines (TCM) along with modern therapy and in 90% cases of infected people in China, TCM was practiced. One must be surprised that in China 83,059 cases were confirmed and out of these highly significant numbers 76,052 cases were recovered and 3,305 deaths were recorded. It is astonishing that 91.56 percentage of people recovered!! Either China already has vaccine against the COVID-19 or the TCM must have played the magic. Thus, our country should also leave no stones unturned to try Indian Traditional Medicines for preventive measures. There are many such herbs those if used as preventive medicines, could bring down the numbers of casualties. Tibet and Japan are least affected from COVID-19 as both are highly dependent on traditional herbs which possess great healing power and highly rich in anti-oxidant compounds and wonderful immunity booster. Use of plants as a source of medicine has been an ancient

practice and is an important component of the healthcare system in India. In India, about 80 percent of Indian population tried the traditional Ayurvedic system of medicine many times. Most healers/practitioners of the traditional systems of medicine prepare formulations by their own recipes and dispense to the patients. In the Western countries, approximately 40 % of people are using the herbal medicine for the treatment of various diseases. (Pandey *et al.*, 2013).

Thus, keeping the current trend as on 31st March, 2020, seventh day of total lockdown in India, when total cases of corona infected people in the country are 1397, recovered cases 124 and total deaths 35, the corona virus has no chance to enter in to community stage-3 and epidemic stage-4 and the country would be safer from killer COVID-19. In India, total confirmed cases would even never touch the number of deaths in some countries like US, Spain and France. Italy's figure of deaths is too high to reach in India. Barring a few ignorance by public and group of people, those ignored government advisories, and keeping in mind current trend, the expected confirmed cases would range between 5000 to 7000 cases and deaths should not go beyond 7% of confirmed cases when country will finally be free from COVID-19 in a couple of months.

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