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Original Research Article

EFFECT OF HERBAL MEDICINES USED TO PREPARE "INDIAN KADHA" MAY PROVED TO REDUCE THE NUMBER OF COVID-19 POSITIVE CASES: A POTENTIAL HYPOTHESIS

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Abstract: Virus plays an important role in human disease and as we know that now a days humans are most frequently travelled around the world due to globalization. The prevention of such severe attcks by microbes is a critical issue for public health. Our experts are making efforts to develop antiviral therapies either in the form of vaccines or other drugs as supporting therapies. Here we are going to target Covid-19 or a Corona Virus which is Pleomorphic or spherical single stranded, enveloped RNA and covered with club shaped glycoprotein. Still we identified 4 types of corona virus such as alpha, beta, gamma and delta corona virus. Till now there is no specific vaccine or therapy developed to safe the human beings against the Covid-19. Only supportive therapy is followed by health professionals includes antipyretics, analgesics, maintenance of hydration, artificial respiration or ventilation, antiviral drugs, anti malarial drugs, steroids like dexamethasone as so on. Recently, the Ministry of AYUSH has also advised drinking decoction to increase immunity. According to Indian system of medicine, this decoction made of Crude drugs will not only protect you from COVID-19 but will also protect you from other diseases. Ministry of AYUSH and CSIR, India announced clinical trials aimed at studying the use of Ayurvedic herbs as a preventive treatment to front line workers and infected patients in a large study which is to start soon. Other medicines under study include Cinnamon, Giloy, Tulsi, Fresh Ginger, Black pepper, Fresh Turmeric, Mulethi, Ganga Jal and some other herbs like ashwagandha around 50,000 people. The results of such studies will publish very soon as anti-corona virus drugs. The use of ayurvedic medicines in some cases is also being studied for its prophylactic use and hence, has been termed as an anti-viral remedy.

Keyword: Covid-19, Corona Virus, Kadha, Cinnamon, Giloy, Tulsi, Fresh Ginger, Black pepper, Turmeric, Mulethi

Introduction: The World Health Organization (WHO) welcomes innovations from our young scientist to fight against COVID 19. WHO is working with research institutions to select traditional medicine products which can be investigated for clinical efficacy and safety for COVID-19 treatment. WHO recognizes that traditional, complementary and alternative medicine has many benefits and India has a long history of traditional medicine and

practitioners that play an important role in providing care to populations. Medicinal herbs are being considered as possible treatments for COVID-19 and they should be tested for their efficacy and adverse side effects.

WHO welcomes to all the organizations of high repute from entire world to collaborate and develop such a wonderful anti COVID 19 therapy to save us.

All most countries of the world are suffering from the Covid-19 pandemic. To avoid this infection, it is most important that your immunity system remains strong. For this, not just foods but there are some other things that help to boost your immunity. The Ministry of AYUSH has also advised the people to take decoction to increase immunity. According to Indian system of medicine, this decoction made of Crude drugs will not only protect you from COVID-19 but will also protect you from other diseases. You don't need any special thing to make this decoction. Indian traditional Ayurvedic and herbal therapies are used to improved stamina, immunity and energy to fight through diseases. Still, there is no known effective therapy for the common cold although medications and other remedies can help relieve the symptoms. Likewise, there's no cure for human from COVID 19. The World Health Organisation (WHO) and Ministry of AYUSH said that people may reduce the risk of corona virus infection by taking precautionary measures such as - avoiding close contact with sick people, washing hands often, following a healthy lifestyle, yaga, proper physical exercise at their home etc.

List of herbal medicines and their prescribed quantities to make "India Kadha"

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- Black pepper (*Piper nigrum***)** 4 Gms
- Dal Chini (*Cinnamon zeylanicum)* 4 Gms
- Fresh ginger (*Zingiber officinale Roscoe*) 5 Gms
- Fresh turmeric(*Curcuma longa)* 4 Gms
- Mulethi (*Glycyrrhiza glabra)*1 Teaspoonful
- Tulsi leaves (*O. sanctum*) 10 Leaves
- Giloy leaves (*Tinospora cordifolia)*4 Leaves
- Water (as *Ganga jal)* 1 Litre

Method of Preparation: Put all these things in the Imamadasta or in a grinder and make coarse powder. Now put this coarse powder along with water and boil. When 100 or 200 grams of water is left, filter it. The filtrate is ready to consume. Take the Kadha lukewarm by ship slowly.

Medicinal Values of Herbs:

Tulsi Leaves (*O. sanctum*):- Tulsi is a traditional potent herb to improve immunity, cure a cough & cold. Holy basil or Tulsi, is the herb of all purpose – rich with vitamin C, antioxidants, antiseptic and antiviral properties. It protect us from viral infections like cold, flu. Tulsi leaves can be a perfect solution to fight viral infections by increasing immunity and recover from infections. It is recommended by experts that chewing on one fresh medicinal tulsi leaf daily to fight through viral infections. Alternatively, tulsi tea or adding the leaves in curry, curd, milk, soup, food, etc, can help boost your immunity and provide some relief.

Studies showed that the extracts of *O. sanctum* (crude extract, terpenoid and polyphenol) (crude extract, flavonoid and polyphenol) showed significant virucidal effect.Crude extract and terpenoid also showed a significant ($p < 0.001–0.01$) decrease in virus genome copy numbers with lowest dose tested. Therapeutic effect of Tulsi leaves was observed in all three extracts in comparison to the virus control, nevertheless, crude extract and terpenoid maintained this effect for a period of time (up to 72 h post-incubation. The crude extract and terpenoid isolated from the leaves of *O. sanctum* has shown promising antiviral properties against H9N2 virus. Further

investigations are necessary to formulate combinations of these compounds from herbal sources for the broader antiviral activity against H9N2 viruses.

Turmeric (*Curcuma longa*):- Turmeric, *Curcuma longa* L. (Zingiberaceae family) is a known for its great healing properties. A paste of turmeric or raw turmeric with honey can bring in relief from cold, cough and sneezing. *Curcuma longa* and its polyphenolic compound curcumin have been subjected to a variety of antiviral, antimicrobial investigations due to traditional uses and very low unwanted effects. Curcumin and rhizome extract of *C. longa* showed antimicrobial activity against different microbes like bacteria, viruses, fungi, and parasites which have been reported scientifically. The 15 different polyphenols, curcumin through inhibitory activity against IMPDH effect in either noncompetitive or competitive manner is suggested as a potent antiviral compound via this process. Also, di-*O* tryptophanylphenylalanine curcumin & di-*O*-decanoyl curcumin revealed graet antiviral activity against VSV and FHV/FIPV with EC_{50} values of 0.011 μM and 0.029 μM, respectively.

Fresh ginger (*Zingiber officinale Roscoe*):- Ginge (Zingiber officinale Roscoe), is a widely used medicinal plant in India. It has been already proven to have antiviral/antimicrobial activity against human respiratory syncytial virus (HRSV). Fresh ginger as herbal drug works dose-dependently which inhibited HRSV-induced plaque formation in both HEp-2 and A549 cell lines ($p<0.0001$).

Although in contrast, the dried ginger didn't show any dose-dependent inhibition. Fresh ginger (300 µg/ml) could decrease the plaque counts to 19.7% (A549) and 27.0% (HEp-2) of that of the control group. Fresh ginger was more effective when given before viral inoculation ($p<0.0001$), particularly on A549 cells. Fresh ginger (300 µg/ml) could decrease the plaque formation to 12.9% when given before viral inoculation.

Fresh, but not dried, ginger is effective against HRSV-induced plaque formation on airway epithelium by blocking viral attachment and internalization.

Human respiratory syncytial virus (RSV) is one of the most common contagious virus infections which mainly affect to children. Symptoms include sneezing, runny nose, fever, sometimes stuffy nose wheezing. Several RSV illnesses are confused with the common cold. However a bout of RSV will typically last for longer, and will typically include wheezing. In younger children it may turn fatal. Intake of fresh ginger is an effective treatment against human respiratory syncytial virus.

Researchers from India also studied ginger along with other natural compounds for inhibiting H1N1 influenza A. They claimed ginger's allicin content helped inhibit the virus by interacting with its binding capacity.

Cinnamon (*Cinnamon zeylanicum*):- Results advised that a tablespoon of cinnamon once or twice a day can be effective in eliminating or preventing viruses from infecting humans and causing sickness, such as colds, flu, fever, sneezing and even herpes. The bark extract of Cinnamon and its nanoparticles were tested against H7N3 influenza A- virus in Vero cells and the viability of cells was detected by tetrazolium dye (MTT) assay. The silver nano particles derived from Cinnamon extract enhanced the antiviral activity and were found to be effective in the treatment of common cold, cough, sneezing, fever etc when incubated with the virus prior to infection and introduced to cells after infection.

Cinnamon and its corresponding nanoparticles were tested for their cytotoxic effects in Vero cells in order to prepare safety profile. The tested concentrations of extract and nanoparticles (up to 500 µg/ml) were found non-toxic to Vero cells. The biosynthesized nanoparticles may, hence, be a promising approach to provide treatment against flu infections or influenza virus infections.

To investigate the effects of cinnamon zeylanicum oil as biochemical, immunostimulant and antioxidant activity the experiment were conducted. 151 days-old chickens were fed by five diet supplements with 0%,0.1%,0.3% of essential oil, and 1%,3% of cinnamon powder for 30 days serum and whole blood were collected for evaluation of total antioxidant, lysozyme activity ,phagocytic percent, phagocytic index, T.protein, S.albumin, & S.globulin,. Total protein showed significant (P-value <0.05)in day 14,21 and 28 while the s.globulin was siginificant at day 14,21 and 28 with (P-value<0.05) when compared with control group. But albumin showed no-significant ,while total Anti-oxidant capacity (TAC) was highly significant (P-value<0.01) at day 14,21 and 28.

This experimental investigation showed that cinnamon zeylanicum essential oil and powder exhibits antioxidant ,immunostimmulat and antiviral activity.

Mulethi or Licorice *(Glycyrrhiza glabra L):-* Licorice is a traditional and frequently available herb containing around 20 triterpenoids and nearly 300 flavonoids isolated from licorice. Studies have shown that these metabolites several pharmacological activities, such as antiviral, antimicrobial, anti-inflammatory, antitumor etc. This article will be helpful for the further studies of Mulethi for its potential and specific therapeutic values as an antiviral or an antimicrobial agent. Glycyrrhizin (GL), licochalcone E (LCE), licochalcone A (LCA), 18*β*-glycyrrhetinic acid (GA), liquiritigenin (LTG), and glabridin (GLD) are the main active components which possess antiviral and antimicrobial activities.

GL showed a significant inhibiting effect to influenza virus. A therapeutically achievable concentration (at a concentration of 100 μg/mL), GL weakened H5N1-induced production of chemokine (C-X-C motif) ligand 10 (CXCL10), interleukin 6 (IL-6) and chemokine (C-C motif) ligand 5 (CCL5), and suppressed H5N1-induced apoptosis. The high-mobility-group box1 (HMGB1) DNA-binding site was indicated to enhance influenza virus replication. The experimental studies showed that GL could be considered a promising agent for the treatment of influenza.

Black pepper (*Piper nigrum*):- Piper nigrum or black pepper is a very common herbal drugs and which is used traditionally in routine food items as spices. Which offers antiviral properties that will improve and fortify the immune system, strengthening our body's natural defences against common colds, cough, sneezing, mumps, measles, and any other virus-producing foreign invader which adversely affect our health. Antiviral is often do this by boosting or increasing white blood cell count, those immune system cells that are there to protect. It showed no antiviral activity against two further investigated viruses, *i.e.* human rhinovirus type 2 (HRV2), and influenza virus type A (HK68). Out of the ten isolates, 6, 7, and 9 showed moderate activity against CVB3 with IC_{50}s between 10.0 – 28.7μM, but also distinct cytotoxicity in HeLa cells. The extract of Piper nigrum in chloroform shows higher activity than compared to Piper nigrum in methanolic extract against Vesicular stomatitis Indiana virus and Human para influenza viruses.

Giloy (*Tinospora cordifolia*):- *Tinospora cordifolia* / Giloy or "Guduchi" is commonly known for its wide application in the treatment of various diseases according to the traditional ayurvedic literature. *Tinospora cordifolia* having immuomodulatory properties which is well documented through several reputed literature. The major active constituents are 11-hydroxymustakone, N-methyl-2-pyrrolidone, N-formylannonain, cordifolioside A, magnoflorine, tinocordiside and syringin has been reported to have potential cytotoxic & immunomodulatory effects. The experiments reported to function by increasing or boosting the phagocytic activity of macrophages, production of reactive oxygen species (ROS) in human neutrophil cells, enhancement in nitric oxide (NO) production by stimulation of

splenocytes and macrophages which indicate its anti-tumors property. Aqueous extract *of Tinospora* has been also founded to influence the cytokine production, stimulation and activation of immune effector cells, mitogenicity etc. Anti-HIV effects of TCE was reported by reduction in stimulation of B lymphocytes, eosinophil count, macrophages and polymorphonuclear leucocytes and hemoglobin percentage. The antimicrobial activity of *Tinospora cordifolia* extracts has been assayed against *E. coli, S. aureus, Klebsiella pneumoniae, P. vulgaris, S.typhi, Shigella flexneri, S. paratyphi, S. typhimurium, Pseudomonas aeruginosa, Enterobacter aerogene,* and *Serratia marcesenses* (Gram-positive bacteria). TCE has been reported to function in bacterial clearance and improved phagocytic and intracellular bactericidal capacities of neutrophils. TCE has been declared with immunostimulant properties on macrophages.

Water *(Ganga Jal)*:- The researchers has been reported that water of Ganga have "ninja virus" called bacteriophages that pure Ganga water. Bacteriophages boosts our immunity which helps us to fight the virus. The broad studies and researches on Ganga water's anti-viral properties and its ability to improve or boost immunity in fighting several diseases. Our scientist from the Institute of Microbial Technology, Chandigarh (IMTECH), studied the special characteristics of Ganga jal have found for the first time, several Bacteriophages, which keeps it non-putrefying. Bacteriophage, a type of virus that eats bacteria or reduce their nos. The discovery resolves the mystery for the self-purification properties of Ganga water. "Analysis of the fresh water revealed that the holy river Ganga not only house novel viromes, but also include unexplored double stranded DNA viruses,"

Institute of Microbial Technology, Chandigarh and few other scientific organizations claimed that the first time, they have come across new viruses. The fresh water sediments from the Ganga house several novel viruses like bacteriophages are active against certain viral strains and can be used against multi-drug resistant or MDR infections. CSIR has reported more than 25 novel viruses, which can be used for treatment of diarrhoea (Aeromonoas), meningitis (Cronobacter), tuberculosis (Mycobacterium), cholera (Vibrio), typhoid (Salmonella), pneumonia (Klebsiella and Acinetobactor), dysentery (Shigella), etc. Findings revealed variety of different bacteriophages, which have specific bactericidal characteristics," Current studies showed that the Ganga water was enriched with several strains of bacterial groups like Sphingobacteria, Oscillatoriphycudeae, a-proteobacteria, Flavobacteria, ß-proteobacteria, proteobacteria and Nostocophycideae, whereas sediment was enriched with ß-proteobacteria, a-proteobacteria, Actinobacteria, Clostridia, Sphingobacteria and Deltaproteobacteria."

Conclusion:- Herbs have been used as natural remedies since ancient times. Cinnamon, Giloy, Tulsi, Fresh Ginger, Black pepper, Fresh Turmeric, Mulethi, Ganga Jal have powerful antiviral effects against numerous viruses that cause infections in humans. These herbs would have the same antiviral effects at different dose. If we decide to take Indian Kadha or tinctures, extracts or other herbal products, should consult our healthcare provider to ensure the safe usage. As we know that many viruses remain without preventive vaccines and effective antiviral treatments so their eradication appears difficult. Natural products serve as an excellent source of biodiversity for discovering novel anti viral, revealing new structure–activity relationships, and developing effective protective/therapeutic strategies against viral infections. Many natural products and herbal ingredients are observed to possess amazing antiviral activity and their discoveries can further help develop derivatives and therapeutic leads (e.g., Cinnamon, Giloy, Tulsi, Fresh Ginger, Black pepper, Fresh Turmeric, Mulethi, Ganga Jal and many others) having active derivatives as inhibitor against

Covid-19, H1N1, HRV-2, HK68, H7N3, RSV and other type of influenza viruses.

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