

Research Article

Role of Ayurvedic Herbal Medicines and Ayurvedic Therapies in Prophylaxis and Therapeutic Management of SARS CoV-2 (Covid-19) Coronavirus

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Abstract: Despite of worldwide efforts, the SARS CoV-2 (Covid-19) coronavirus pandemic is continuing. At present there is no medicine, vaccine which has evidence, so there is utmost need of clinical intervention by the oldest traditional health science that is Ayurveda. In Ayurveda text 'Acharya charak' has described in 'viman sthan' in 'janpadodhawasan chapter', about epidemic disease and its management, SARS CoV-2 can be correlated with the disease 'tiwra Pinas' which is 'vata kapha sannipataj jwar' which has similar symptoms like SARS CoV-2. Ayurvedic herbal medicine advised in this disease are 'Aagneya in Guna' most of the herbs are antiviral, antioxidants and immunity modulators which may help in preventive and therapeutic aspects by breaking virus, overall it may help to reduce mortality rate. In covid-19 other than Pneumonia; another cause may be disseminated intravascular coagulation that is thrombosis. The affected parts are lungs and terminally cardiac arrest, stroke and many other thromboembolic diseases, in this role of Ayurvedic herbal medicines may act as antiviral, antioxidant, anticoagulant, immunity modulator, also works in breathlessness and reduces mucus, reduces inflammation in respiratory tract as an anti-inflammatory effect & may reduce viral replication by breaking virus. Overall Ayurvedic herbal medicines may play important role in prophylaxis and therapeutic management of SARS CoV-2 (Covid-19) coronavirus.

Keywords: Ayurveda, ayurvedic herbal medicines, immunity modulators, prophylaxis, therapeutic management, SARS CoV-2 (Covid-19) coronavirus, traditional medicine Ayurveda, 'Acharya charak', 'viman sthan', 'janpadodhawasan chapter'; 'tiwra Pinas'; 'vata kapha pradhan sannipataj jwar'; 'aagneya in guna'.

Introduction

Covid-19 coronavirus (SARs-Cov2) (1;2), that is severe acute respiratory syndrome. Despite worldwide efforts, the pandemic is continuing. So there is utmost need of clinically proven prophylaxis and therapeutic management. Right now there is no treatment or medicine has evidence in the treatment for covid-19. Now there is utmost need of clinical intervention by ancient traditional medical science that is Ayurveda. In Ayurveda text 'Acharya charaka' has a described in 'viman sthan' in 'janpadodhawasan' (epidemic) chapter, about causative factors and its management. It can also be correlated with the disease called 'Tiwra Pinas', which is a disease of respiratory tract having similar symptoms like SARS CoV-2. This disease is 'vata-Kapha pradhan sannipataj jwar', for this most of the medicines advocated are 'aagneya in guna' which breaks the virus and treat the disease.

The coronavirus is RNA virus (Ribonucleic acid). This virus is not living organism but protein molecule covered in protective layer of lipid (fat), which, when absorbed by the cells of ocular, nasal, buccal mucosa, the virus changes his genetic code (mutation) and converts into the aggressive and multiplier cells. As it is not bacteria, so no antibiotic works. Vaccines (when it will be developed) will be for prevention and not treatment of existing disease.

There are some Ayurvedic prophylaxis and therapeutic measures, which may be helpful in breaking the virus and treating the disease which will reduce mortality rate.

In prophylaxis management the main role is of immunity booster is to form the antibodies against the virus. In covid-19 other than pneumonia, another cause may be disseminated intravascular coagulation (thrombosis). Because of this thrombosis the lung are the most affected as, they are most inflamed, but there is also heart attack, stroke and many other thromboembolic diseases, which may mainly cause pulmonary thrombosis /thromboembolism. Ayurvedic herbal medicines may play important role in prophylaxis and therapeutic management of SARS CoV-2 (Covid-19) coronavirus which will be helpful.

Materials

Immunity means WBC, antibodies, lymphatic system, spleen, thymus gland, bone marrow immunity (internal defence mechanism) is resistance that the body provides against pathogens and their harmful effects antibodies may neutralize virus directly or destroy virus infected cells via ADCC or complement.

- 1) Innate immunity (natural or inherited): we get naturally through genetic factors.
- 2) Acquired immunity: this we get after we attend or we get exposed to antigens.

The Acquired immunity has again two types

- a) Active acquired immunity-which gained as result of direct exposure to antigens.
- b) Passive acquired immunity-this is transmitted from mother to baby that is the antibodies transmitted to baby to placenta and breast milk.

Causes of low immunity

Unhealthy or nutrient deficiency diet, irregular or less sleep, stress, smoking over consumption of alcohol, over exercise, lack of physical activity inadequate hygiene, high sugar intake, use of cortisol overdose of antibiotics.

How to check immunity

Blood test (immunoglobulin-IgA, IgG, IgM)

The immunoglobulin means the antibodies that normal level of infection fighting proteins. Abnormal number of certain cells of WBC can indicate immune defect.

IgA, IgG, IgM test which measures the level of types of antibodies to protect the body from bacteria, viruses and allergens. The body makes different antibodies or immunoglobulins to fight different things. Sometimes the body may even mistakenly makes antibodies against itself, treating healthy organs tissues like foreign invader which is called as autoimmune disorder.

Types of antibodies

Immunoglobulin A (IgA)-found in the lining of respiratory tract and digestive system as well as in saliva, tears and breast milk.

Immunoglobulin G (IgG)-most common antibody, it's in blood and other body fluids. It protects against bacterial and viral infection can take time to form after infection or immunization.

Immunoglobulin M (IgM)-found mainly in blood and lymphatic fluid this is the first antibody the body makes, when it fights a new infection.

Immunoglobulin E (IgE)-found in small amount in blood, there may be higher amounts when the body overreacts allergens or is fighting and infection from parasites.

Immunoglobulin D (IgD)-this is the least understood antibody with only small amounts in the blood. Normal range of the immunoglobulin in the blood.

Low lymphatic is also sign of disease.

IgG-6.0-16.0g/l; IgA-0.8-3.0g/l; IgM-0.4-2.5g/l or IgM-37-286mg/l

How to develop immunity

When pathogens invade body, the pathogens multiply and disease occurred. Then the body immediately starts making antibodies to attack pathogens. The person normally gets better once enough antibodies are formed. Another way to develop immunity to disease is to be inoculated with vaccine. Artificially person received antibodies in the form of injection that is gamma globulin.

What to do to boost immunity

Immune systems live in our Gut. So the advice is to take balance rich diet with proteins, good fats, Omega 3 and 6, fresh fruits (special seasonal), fresh vegetables. Increase citrus fruits in diet which contain vitamin c which is very good immunity booster. Oranges, sweet lime, lemon, pineapple, berries, guava, avocado, papaya spanich, tomato, yoghurt, amla (*Phyllanthus emblica*/gooseberry), grapes, tangerines, kale, watermelon, celery, sweet potato, oily fish, red capsicum, carrot, beet, cabbage, cauliflower, broccoli, brinjal, nuts, (almonds soaked overnight) walnut, garlic, Ginger, turmeric, green tea.

Vitamin C, Vitamin D, Vitamin E are vital support for biochemical reaction in immune system. These are powerful antioxidants to fight off infection.

***Blueberries:** contains a type of flavonoid called anthocyanin which has antioxidant properties, that can help to boost immunity. These flavonoids play an important role in respiratory tract immune defence system.

***Dark chocolate:** contain theobromine, that is high flavonoids, which is antioxidant prevent from free radicals, which are molecules, that the body produces. When it breaks down food come into contact with pollution, they damages cells.

***Oily fish:** salmon, tuna, Pilchard are rich in Omega 3 fatty acids, contains many essential nutrients, flavonoids and carotenoids antioxidants.

***Broccoli:** contains vitamin c, which acts as antioxidant.

***Sweet potatoes:** rich in beta carotene, contains vitamin A, which acts as antioxidant.

***Ginger:** (*Zingiber officinale*) which acts as antioxidant.

***Almonds:** contains vitamin E, manganese, magnesium and fibre.

***Drumsticks:** boost immunity and acts as a shield virus to grow.

***Coconut water with lemon:** coconut water plus half lemon which boosts vitamin c 10 times more than vitamin in oranges. **Note:** it is not advisable in kidney patient.

***Garlic** (*Allium sativum*) is antiviral, antioxidant contains allicin.

***Onion** (*Allium cepa*)-which acts as antiviral.

***Green tea:** contains small amount of caffeine and also contains flavonoids.

***Pumpkin seeds:** 3 to 4 tea spoon pumpkin seed increases healthy fats, magnesium and zinc which are vital for immune function.

***Sunflower Seeds:** Rich in vitamin E, which acts as antioxidant.

***Red bell paper** (red capsicum): vitamin c present three times higher than orange.

***Empty stomach fruit:** which makes system alkaline.

***Exercise:** Regular walking may lead to higher number of WBC, which fights against infection.

***Adequate sleep:** Ensures the secretion of melatonin a molecule, which plays a role in boosting immunity. When we sleep our immune system produces protective infection fighting substances like cytokines which fight against bacteria and viruses.

***Stress management:** by meditation (Pranayam) that is breathing exercise reduces NF- κ B, may reduce CRP and do not appear to increase inflammatory cytokines. Ashwagandha (*Withania omnifera*) is one of the good anti stress and anxiety agent.

***Zinc:** coronavirus appears to be susceptible to the viral inhibitory actions of zinc. Zinc may prevent coronavirus entry into cells and appears to reduce coronavirus virulence. Daily dose is 15 mg to 30 mg with lozenges, potentially providing direct protective effects in upper respiratory tract.

***Fasting:** fasting for three days will reset immunity and metabolism.

***Honey:** acts as antioxidant

***Copper Pot (Kasya pot):** that is derivative of copper known to be beneficial for immune system. Neem leaves (*Azadirachta indica*); bitter melon (Karela)/bitter melon/ *Momordica charantia*; Methi (Fenugreek/*Trigonella foenum-graecum*); they stimulate the immunity. Bitter herbs interact with taste receptors in mouth, they set off production of mucus to protect cells and prevent invasion and activate cells to sweep particles out.

Vegetables and fruits contain isolated flavonoids

Many flavonoids reduce NLRP3 inflammasome signalling and consequently NF- κ B, TNF- α , IL-6, IL-1 β , IL-18 expression.

Liquiritigenin from *Glycyrrhiza glabra* (Licorice)-That is Mulethi/Yashtimadhu contains flavonoids. Dihydroquercetin and quercetin found in onion and Apple. Quercetin also functions as zinc ionophore chelating zinc and transporting it into cell cytoplasm. This could theoretically enhance the antiviral action of zinc. Myricetin found in tomatoes, oranges, nuts and berries-Apigenin found in *Matricaria recutita* (Bogdanoff/ Scented mayweed/Camomile)-Epigallocatechin gallate (EGCG) from green tea is antiviral especially in early stage. EGCG links quercetin (zinc ionophore) which potentially works as antiviral action of zinc.

pH of coronavirus may vary from 5.5 to 8.5, so it is advised to take alkaline food specially with vitamin C content which are immunity boosters, also lemon-9.9 pH, lime-8.2 pH, avocado-15.6 pH, garlic-13.2 pH, mango-8.7 pH, tangerine-8.5 pH, pineapple-12.7 pH, dandelion-22.7 pH, Orange-9.2 pH. Vitamin D that is 25 hydroxy D is very good immunity booster. Every cell in body has receptor binding. This binding is supported that is strengthened by vitamin D supplements. In Vitamin D deficiency, the receptor cyclic AMP/cAMP weakens the binding in cell, so virus easily enters in cells. In vitamin D deficiency, one can be prone to get upper respiratory tract disorder. Good source of vitamin D is early sun rays. Another thing sun rays contain ultraviolet rays which break outer fat layer of virus.

Ayurvedic Herbal Medicine and Therapies

Hot water/rasam/soup/green tea, you can take whole day sip by sip in lukewarm form. **Shadanga paniya churna (powder):** Lal Chandan-sandalwood (*Pterocarpus santalinus*), Netra Bala (*Sida cordifolia*), Nagarmotha-Cyperus rotundus (Nut grass), Dry ginger- (*Zingiber officinale*), Pittpatra-*Fumaria officinalis* Linn., Ushir-khas-khas-perennial grass (*Vetiveria zizanioides*). Take 10 grams of above powder mixture into 2 litres of water, Boil it till it becomes 1 litre, then rinse it, Take sip by sip (lukewarm) whole day.

Tulsi tea: Tulsi-holy basil (*Ocimum tenuiflorum*), Shunthi (Dry ginger)-*Zingiber officinale*, Marich (Black pepper)-*Piper nigrum*, Small piece of Onion (shallot)-*Allium cepa*, Vasa (malabar nut)-*Justicia adhatoda*, Amrta (*Tinospora cordifolia*)-giloy, Jaggery (traditional non-centrifugal cane sugar). Take 2 Tea Spoon of above dry powder, Mix it in 2 cups of water, boil it till it remains one cup. Then Rinse it, take it as like tea, 3-4 times a day.

Steam inhalation: With the mixture of Tulsi (holy basil)-*Ocimum tenuiflorum*, Pudina (mint leaves)-*Mentha arvensis*, Shunthi (dry ginger)-*Zingiber officinale*, Marich (black pepper)-*Piper nigrum*, Pippali-*Piper longum*, Haridra-(turmeric)-*Curcuma longa*, Ajwayan (caraway seeds) *Trachyspermum ammi*. Take steam two to three times per day.

Gandush/gragle: Water boiled with turmeric-*Curcuma longa*, harada-*Terminalia chebula*, baheda-*Terminalia bellirica*, Amla-*Phyllanthus emblica*, Yashtimadhu-*Glycyrrhiza glabra*, Sendhav namak-rock salt (NaCl)-do gargle two to three times per day.

Kaval/gandush (oil pulling/swishing of oil): Take 1/2 tablespoon of Til oil (lukewarm) keep in mouth for 2 to 3 minutes and spit it.-Two times per day.

Coconut water (*Cocos nucifera*): One lemon (citrus limon), turmeric (*Curcuma longa*), ¼ tea spoon, honey, ¼ tea spoon in one coconut (*Cocos nucifera*) water, Take in the morning empty stomach.

For removing lungs toxins: Methi seeds (fenugreek *Trigonella goenum-graecum*) two tea spoon of this, soak in 1 cup of lukewarm water overnight. Take in the morning before breakfast Chew it properly, will clear the toxins from lungs.

For scalp rubbing (dry powder rubbing on scalp): Rub gently on scalp once per day the mixture of powder. Ashwagandha (*Withania somnifera*), Devdaru (*Cedrus deodaru*), Kutki (*Picrorrhiza kurroa*), Sarjras (*Vateria indica*), Rasna (*Alpinia galanga*), Kustha (*Saussurea costus*), Vacha (*Acorus calamus*), Gairika (*Red ochre*), Haridra (*Curcuma longa*), Yesthimadhu (*Glycyrrhiza glabra*), Bala (*Sida cordifolia*), Mustaka (*Cyperus rotundus*), Pippali (*Piper longum*), Marich (*Piper nigrum*), Sauntha (*Zingiber officinale*), Putikhadir (*Holoptelea integrifolia*), Sahastravedhi (*Ferula foetida*), Sariva (*Hemidesmus indicus*), Ushira (*Vetiveria zizanioides*), Samudrafen (Cuttlefish bone), Chandan (*Santalum album*), Agar (Aquilaria *agallocha*), Trinetri dal (*Tamarindus indicus*).

Turmeric/Haldi milk (*Curcuma longa*): In one glass of milk, add half tea spoon of turmeric Boil it, Take lukewarm 2 to 3 times per day.

Dhoopan (smoke gaseous products by burning medicated herbs to disinfect/fumigate home area): Nimba (Neem tree), *Azadirachta indica*, Coconut shell-shell of *Cocos nucifera*, Hingu-(*Ferula asafoetida*), Sweth sarshap-*Brassica campestris* Linn-(mustard), Tunic of garlic-*Allium sativum*, Tunic of Onion-*Allium cepa*, Sendha namak-Rock Salt-(NaCl), Raal-*Vateria indica* Linn, Guggulu-*Commiphora wightii*, Laksha-*Laccifer lacca*, Kushta-*Saussurea costus*, Ativisha-*Aconitum heterophyllum*, Haridra-*Curcuma longa*, Haritaki- *Terminalis chebula*, Ela-*Elettaria cardamomum*, Priyangu-*Callicarpa macrophylla*. Burn above herbs mixture in a pot to form smoke. Fumigate home by smoke, which will disinfect the home and surrounding area.

Swarna siddhajala (gold infused water): Take Swarna abhushan (gold Ornament) Plus 8 liters of water in pot, Boil it till the water becomes 4 litres Rinse it. Drink the swarnasiddha jala (lukewarm) whole day sip by sip.

Maintain dincharya (lifestyle)-Daily routine: Ratricharya (sleep schedule)-Night regimen, Ahar (Diet) proper diet on daily basis.

Chanting of Gayatri mantra/jap/mahamrutunjaya mantra for positive energy.

Avoid cold/Preservative packed food/Avoid junk food/maida (very finely grounded wheat flour) as much as possible.

Nasya by anutaila/ Til tail/ shadbindu taila (putting or application of medicated oil in both nostrils-mucosa): The medicated oil absorbs through nasal mucosa and acts on centres controlling neurological, endocrine and circulating functions, shows systemic effect. As per pharmacokinetics, drug may act through receptors cell of olfactory mucosa, sensory receptors of trigeminal nerve, cavernous sinus. The circulation of nasya dravya, by neuronal pathway by Olfactory and Trigeminal, then by circulatory pathway by cavernous sinus, which may overall targets limbic system, sensory area of trigeminal nerve and circulation.

This nasya help to control overall system if body, which help to treat the disease.

Copper water: Copper has molecule which is of 29 number and which contains one free electron, which acts in oxidation and reduction. This free electron acts with oxygen and forms molecular oxygen/ion, overall it breaks the supplement of oxygen to superficial layer of fat of virus, so virus may get break.

Role of kalmegh: (*Andrographis paniculata*) Bhunimba/kirot is anti-oxidant, antiviral, immunity modulator, it may join to the protein of virus and breaks the virus.

Drink daily at least 2 liters of water per day.

Ayurvedic herbs which may be helpful as antiviral, antioxidant immunity modulator in a breaking the virus: Haldi-*Cucuma longa*-Turmeric, Sahajan-*Moringa oleifera*-Drumstick, Saunth-*Zingiber officinale*-Dry ginger, Marich-*Piper nigrum*-Black pepper, Pippali-*Piper longum*, Loung-*Syzygium aromaticum*-clove, Tulsi-*Ocimum tenuiflorum*, Kutki-*Picrorhiza kurroa*, Chirayata-*Swertia chirata*, Nimbu-*Citrus limon*-lemon, Giloy-*Tinospora cordifolia*, Yesthi madhu-*Glycyrrhiza glabra*, Gojivaha-*Onosma bracteatum*, Dalchini-*Cinnamomum verum*, Ashwagandha-*Withania somnifera*, Amla-*Phyllanthus emblica*-gooseberry, Dhaniya-*Coriandrum sativum*, Lahasvan-*Allium sativum*-Garlic, Ajwayan-*Trachyspermum ammi*-bishops weed or carom seeds, Pudina-*Mentha arvensis*-Mint, Banfasha-*Viola odorata* Linn-wild violet/sweet violet, Shirish-*Albizia lebbek*, Kantkari-*Solanum virginianum*-wild eggplant, Vasa-*Justicia adhatoda*-malabar nut, Tej patra-*Cinnamomum tamala*-Indian bay leaf, Nim Patra-*Azadirachta indica* (leaves), Kalmegha-*Andrographis paniculata*.

Take 10 gm of above powder mixture in 2 glass water. Boil it till it remains 1 glass, and then rinse it. Drink sip by sip whole day.

Nebulization by above mixture of Ayurvedic Herbs: This above mixture can be also used for nebulization. Take above powder mixture, boil it in water till it forms thick preparation. Then dry it till it forms powder, then make very fine powder (specially through powder filter machine). Take 500mg powder. Add in 5 ml distilled water, give nebulization in SARs CoV2 viral infection. The most affected part is respiratory system, in this condition this above nebulization may help to prevent to put the patient on ventilator.

Mahasuharshan Ghan vati (Tablets) in this following are the contains: Haritaki (*Chebulic myrobalan/ Terminalia chebula*), Bibhitaki (*Terminalia bellirica*), Amla (*Emblca officinalis*), Haldi/haridra (*Curcuma longa*), Daru haldi/Daruharidra (*Berberis aristata*), Badi Kateri /Brihati (Indian nightshade/*Solanum indicum*), Kantakari/Chhoti Kateri (Thorny night shade/*Solanum surattense*), Kachur (zedoary/*Curcuma zedoaria*), Saunth (*Ginger officinale*) Dry ginger, Kali mirch (Black pepper/ *Piper nigrum*), Pippali (long pepper/ *Piper longum*), Piplamool (long pepper roots) *Piper longum*, Murcha (Mor Bel), Giloy (*Guduchi/Tinospora cordifolia*), Dhamasa (*Duralabha/Fagonia cretica*), Kutki (*Picrorhiza kurroa*), Pitpapra (Shahtra/*Fumaria indica*), Kurchi (*Kutaj/Holarrhena antidysenterica/Pubescens*), Yashtimadhu (*Licorice/Glycyrrhiza glabra*), Nagarmotha/mustak/nut grass (*Cyperus rotundus*), Trayamana/*Himalayan gentian/Gentiana kurroo*,

Netrabala/Sugandha bala/*Pavonia odorata*, Pushkarmool/Elecampane/*Inula racemosa*, Neem/*Azadirachta indica* inner bark, Ajwain/carom seeds/*Trachyspermum ammi*, Indrayava/*Holarrhena antidysenterica* seeds, Bharangi-*Clerodendrum serratum*, Sahjan seeds/*Moringa oleifera*, Fitkari ka fula, Vacha (*Acorus calamus*), Dalchini (Cinnamon/*Cinnamomum Zeylanicum*), Padmaka (*Prunus cerasoides*), Safed chandan (white sandal wood/*Santalum album*), Ativisha (*Aconitum heterophyllum*), Bala (country mallow/*Sida cordifolia*), Shalaparni (*Desmodium gangeticum*), Prishnaparni (*Indica uraria/Uraria picta*), Vaividang (false black pepper/*Embelia ribes*), Tagara (*Valeriana wallichii*), Chitrakmool (*Plumbago zeylanica*), Devdaru (Deodar cedar/Himalayan cedar/*Cedrus deodara*), Chavya (java long Piper/ *Piper chaba*), Patol (pointed gourd leaves/ *Trichosanthes dioica*), Safed kamal (white lotus/ *Nymphaea lotus*), Kakoli (white Himalayan lily/*Lilium polyphyllum*), Jivaka (jeevaka/*Malaxis acuminata*), Rishbhak (*Malaxis muscifera*), Ushira (Khas/Vetiver/*Vetivera zizanioides*), Laung (Clove/*Syzygium aromaticum*), Vanshlochan (Tabasheer/*Bamboo manna*), Tejapata (Indian bay leaf/ *Cinnamomum tamala*), Javitri (Mace/*Myristica fragrans*), Talispatra (*Abies webbiana*), Chirata (Kiratikta/*Swertia chirata*).

Medicinal properties of Mahasudarshan Ghan Vati (tables) are: Antipyretic, detoxifying, antiviral, antibacterial, antimalarial, diaphoretic (induces Perspiration) anti-typhoid; antimicrobial, neuroprotective, cardioprotective, haematinic, hepatoprotective, spleno-protective, appetizer, antioxidant, antipyretic.

Dosages: Adult 2 to 4 tablets of 250 mg to 1 gm. Maximum 16 tablets, that is 4 grams per day in divided doses. Children 1 to 2 tablet of 250 mg to 500 mg with lukewarm water. This above herbal medicine may be helpful in SARs Covid-19 therapeutic management.

In this support-Sanshamani vati, Amla, *Tinospora cordifolia* can be taken.

Dosage: Adult 500 mg to 1000mg maximum 3 gm per day in divided doses, Children 250 mg to 500mg in divided doses.

In additional support-Immunity boosters like Chyawanprash, Kushmanda rasayana, Drakshavaleha, Agastya Haritaki Avaleha, Vyaghri Haritki Avaleha, Pipali rasyan/Aaganeya rasayana can be advised to boost immunity.

Nabhi basti /Chakra basti (Reference Bhava prakasha, Madhyama khanda, Atisara adhikara 8/40-41) Nabhi basti is extension of Nabhi Puranam. Nabhi basti means pooling of medicated oil in the naval pit (belly button) within a cabin of flour constructed around the navel. Here the lukewarm medicated oil is retained for 30 minutes. Nabhi is one of the most important organ by Ayurveda. After birth cutting of umbilical cord through this gets considered rudimentary /useless by present science. But by Ayurveda it is connecting points of nerves, and point onset of life. Nabhi basti is also known as 'Chakra' help to balance the nabhi marma (vital organ), the vital centre in which all 72000 nadies (subtle energy pathways) converge. Nabhi the umbilicus considered as marma (vital organ) by Ayurveda is an anatomical area where arteries, tendons, muscles, veins, bones and joints meet to form the location of life. Anatomical areas where structure pulsate and where the tenderness (pain on pressure) called as marma. In total there are 107 marmas in body.

Benefits of nabhi marma-Acts on solar plexus, thus balance the digestive fire (jatharagni), strengthen the power of digestion and absorption facilitates the release of deep seated emotions, balances the nervous system, nourishes and rebuilds energy centres and most important is it increases immunity. 'Nabhi Chakra' is a cosmic centre (one among 7 'chakras') encompasses all the channels, connections and current layout of body, for example after hearing shocking news immediate feeling is at umbilicus. As per the present study belly button is the source of one third of blood, 80% of serotonin and 50% of dopamine, which plays important role in achieving balance with hormones of body. Lord Brahma is creator of the world, who born out of lotus emerging from the navel of Lord

Vishnu. So the secret of creation of world emerged from Vishnu nabhi, as per Indian mythology. Nabhi is 'Sira marma' which is 'Sadhya pranahara marma', if injured causes immediate death. As per Ayurveda nabhi is 'pitta sthana' that is 'Agni sthana'. 'Puranas' have mentioned nabhi is second brain of body. The diseases related to 'vata' and 'pitta' doshas can be treated by 'nabhi basti'. Daily practice of applying lukewarm medicated oil in nabhi stabilizes 'vayu' (the air element) seated in 'Manipur Chakra' (third 'Chakra') that is energy centre located at the navel. The oil in navel pit is detected by the vein and carries the oil to affected part of body. As 'Nabhi Basti' may be helping in increasing immunity, also helps to treat the diseased factor by the application of medicated oil will be helpful to fight against bacteria and viruses. Mustard oil boosts immunity, treats respiratory tract infection, it is full of MUFA (Mono saturated fatty acids) beneficial for heart, it is antibacterial, antifungal, antiviral. Coconut oil is antiviral properties, antibacterial and antifungal contains saturated fats which boost immunity.

Antiviral herbs as well as immune booster

*Elderberry *Sambucus nigra* (black elder); **Echinacea pupurea* (cone flower), *Calendula officinalis* (marigold) **Allium sativum* (garlic); **Astragalus mongholicus* (Loco weed); **Uncaria tomentosa/Uncaria guianensis* (cats claw) **Hydrastic Canadensis* (orange root/golden seal/yellow puccoon); **Origanum vulgare* (oregano/pot marjoram); Contains carvacrol **Salvia officinalis* (sage). ***Ocimum basilicum (Basil/ sweat basil):** This contains apigenin ursolic acid, are known antiviral herbs. **Zingiber officinale* (Ginger). This contains gingerols zingerone have found to be inhibit viral replication and presents viruses from entering the host cell.**Glycyrrhiza glabra* (mulethi/yasthimadhu/licorice root). The active substances of this are glycyrrhizim, Liquiritigenin and glabridine which have strong antiviral action specially in URTI. **Ocimum tenuiflorum* (holy basil/Tulsi). The holy basil extract increases levels of helper T cells and natural killer cells, both of which are immune cells that helps to protect and defend body from viral infection. **Foeniculum vulgare* (fennel). Fennel is licorice flavoured plant, Trans anethole the main compound of fennel essential oil has demonstrated very powerful antiviral effect. **Mentha piperita* (Pepper mint). The leaves and essential oils contain active components including methanol and rosmarinic acid which is antiviral. **Salvia rosmarinus* (rosemary). Rosemary contains oleanolic acid which is antiviral. **Sambucus nigra* (elderberry). This is antiviral specially acting on upper respiratory tract infection **Penax ginseng* (ginseng). The active antiviral contain of ginseng is ginsenosides. **Taraxacum officinale* (dandelion) dandelion extract inhibits the replication of virus from root of disease. **Camellia sinensis* (Green tea), stimulates T-cells. The T cells are responsible for killing the viruses. **Melissa officinalis* (lemon balm) **Punica granatum* (pomegranate). This has antiviral property. **Cocos nucifera* (coconut oil), contains lauric acid and monolaurin. It may cause disintegration of virus envelope, also can inhibit late maturation stage in the virus replicative cycle and also they can prevent the binding of viral proteins to the host cell membrane.

Turmeric is perennial rhizomatous belongs to Ginger family Zingiberaceae. The synonyms of turmeric are curcumin, curcuma, *Curcuma aromatica*. Turmeric comes from root of *Curcuma longa*. Diferuloylmethane is polyphenols which is responsible for yellow colour, turmeric is bitter and warm.

The pH of turmeric is 7.4 to 8.6 when acidic shows yellow colour and when alkaline shows red colour turmeric indicator changes colour so turmeric also called as universal indicator the scientific classification of turmeric is Kingdom plantae, clade-Tracheophytes /angiosperms/monocots/commelinis, order-zingiberales, family-zingiberaceae, genus- curcuma, species-*Curcuma longa*.

Botanical name *Curcuma longa*, turmeric powder contains 60 to 70% carbohydrates, 6 to 13% water, 6 to 8% protein, 5 to 10% fat, 3 to 7% dietary minerals, 1 to 6% curcuminoids, 3 to 7% of essential oils, 2 To 7% of dietary fibres. Phytochemical components of turmeric include diarylheptanoids class including numerous curcuminoids such as curcumin, Demethoxycurcumin (which is natural

antioxidant) and busdemothoxy curcumin, 34 essential oils present in turmeric among which turmerone, gemacon, althantone and zingiberene are Major constituents.

Turmeric is also known as Indian saffron the name turmeric derived from the Latin word Terra merita (meritorious earth) turmeric is used since 4000 years in India it is known as traditional Ayurveda medicine in Ayurveda it is called as haridra/haldi there are two types of turmeric as per geographic reason.

Madras haldi in Tamil Nadu India

Alleppey (district near Cochin)

Grown in Kerala India turmeric does not cause any significant side effects but may get hyper acidity, nausea dizziness, diarrhoea. Turmeric is not advisable in pregnancy the dose of turmeric is 500 mg extract or 0.5-1.5 tbsps per day.

It is advisable to take empty stomach 30 minutes prior to breakfast. Turmeric is fat soluble nutrient so advisable to take with fatty meals.

Turmeric gets flush out through kidney within 24 hours.

Role of calcium hydroxide Ca(OH)_2 +turmeric

The pH of calcium hydroxide is 12.4. It acts as a disinfectant because of excess lime. Quick lime is chemically strong alkali (base) hence exposure to turmeric powder or turmeric water to quicklime neutralizes the conversion of original benzenoid structure with yellow appearance into a structure quinonoid structure with red colour. Red colour has higher wavelength than yellow because of this turmeric water mixed with quicklime turns into red turmeric is yellow in acid and neutral substance but turns bright red with bases.

Turmeric is reddish yellow rhizome. The more prominent yellow colour is due to presence of the xanthophyll pigment while the reddish orange colour comes from carotene pigment.

The rhizome contains active curcumin compounds and some organic acids when these stems are dried and powdered their concentration increases when powder is dissolved in lime water. The organic acid gets neutralized by alkaline lime because of this it results the yellow xanthophyll is surprised and the orange red carotene pigment becomes more prominent so turmeric turns into red.

Turmeric extract has substantial antiviral effect and its combination with calcium hydroxide increases its antiviral efficiency. Calcium hydroxide is used in pickles, corn products and in process of certain sugar.

Probable role of calcium hydroxide with turmeric powder extract in SARs CoV2 COVID-19 coronavirus

In this viral infection the most affected part is respiratory tract by developing pneumonia secondly complication by thrombosis embolism which terminal leads to ischemic heart/brain disease.

The ischemia causes due to less oxygen supply to heart and brain in this viral infection coronavirus produces oxygen radicals in large amount which affects the functioning of lungs and secondly other organs.

The combination of calcium hydroxide with turmeric powder extract blocks uric acid and oxygen radical production from purines that are usually formed by the body turmeric is an anti-gout drug which may be effective in ischemia and congestive cardiac failure.

As curcumin is antiviral in combination with calcium hydroxide its potential as antiviral increases as the pH of calcium hydroxide is 12.4 is highly alkaline, it also acts as immunomodulator the turmeric is known as immunomodulator, so in combination the action increases so the jointly forms antibodies against coronavirus turmeric is anticoagulant so may act as anticoagulant which prevents thrombosis, embolism. Turmeric is broad-spectrum inhibitor it is cardioprotective natural antibiotic strengthens overall energy, works in breathless and mucus formed in throat.

As per Ayurveda turmeric reduces kapha and so it removes mucus from throat it also elevate cough curcumin detoxifies blood which helps to remove toxins from body as it is having anti-inflammatory effect it reduces inflammation in throat and lungs. Turmeric is antagonistic increases HDL natural antibiotic, antiparasitic, antibacterial, antifungal.

Calcium hydroxide and curcuma is exhibited the antiviral activity and mainly reduces the viral RNA expression protein synthesis and viral fitter in addition it may have protective effect on cells against virus induced adapt ptosis and cytopathic activity.

This combination in a bits replication of human cells, it reduces viral replication by inhibiting viral binding at the cell surface. Viral replication full or suppression of cellular signalling pathway essential for viral replication such as PI3K,AKJ, NF-KB immune, this combination improves cognitive ability to boost the absorption of proteins by the body. This combination is powerful antioxidant scavenge damaging particles in the body known as free radicals which damages cell membrane, temper DNA and even cause cell death. Antioxidant can neutralize free damage decors in additionally this combination of calcium hydroxide and turmeric powder extract reduces inflammation by lowering level of inflammatory enzymes (lox2 and lox) in the body and stop platelets from clamping together to form thrombosis. The combination of calcium hydroxide and turmeric powder as it is antioxidant, it increases antioxidant enzymes and inhibits peroxidation. The recommended dose is 500mg twice a day empty stomach so overall calcium hydroxide with turmeric.

Powder extract may have major role as prophylaxis and therapeutic management in SARs CoV2 COVID-19 coronavirus. The turmeric and calcium hydroxide in combination; Ayurvedic herbal medicines and immunity modulators may play important role in prophylaxis and therapeutic management of SARs CoV2 COVID-19 coronavirus.

Discussion

Ayurveda is science of life: Ayurvedic herbal medicine and therapies mentioned in ancient traditional health science, that is Ayurveda 5000 years ago, has very scientific basis. Ayurveda has main focused on prevention of disease by advocating the daily regime, night regime and about the diet. After this all if disease occurred due to pandemic, Ayurveda has advised therapeutic measures as mentioned in epidemic disease treatment like to take 'shading paniya churna' lukewarm water, Tulsi tea, Steam inhalation, gargle, oil puling, dry powder rubbing on scalp, Dhoopan, Nabhi Basti, Nasya. Also advised about number of antiviral, antioxidant, immunity modulator herbs and medicines which will help to boost the immunity by forming antibodies, and as antiviral action of herbs which breaks the virus. In this many of antiviral herbs inhibits replicative of virus by inhibiting viral binding at cell surface, viral replication tool or suppression of cellular signalling pathway essential viral replication. The immune modulatory improves cognitive ability to boost the absorption of proteins by the body, as they are equally acts as antioxidant scavenge damaging particles in the body known as free radicals, which damages cell membrane, temper DNA and even cause cell death.

Conclusion

The Ayurvedic herbal medicine and Ayurvedic therapies may play important role in prophylaxis and therapeutic management of SARs CoV2 corona virus.

Conflicts of interest: None declared.

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