



Role of turmeric with Calcium Hydroxide in Combination in Prophylaxis & Therapeutic Management of SARs Cov2 Covid-19 Corona Virus

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Abstract

Despite of worldwide efforts, the covid-19 coronavirus SARs CoV2 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 'vimansthan' in 'janpadodhawasana chapter' mentioned about epidemic disease and its management SARs CoV2 can be correlated with the disease 'tiwra Pinas' which is 'vata-kapha sannipataj jwara' which has similar symptoms like SARs CoV2.

Ayurvedic herbal medicines 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. The immunity modulators are helpful in boosting immunity which helps in forming antibodies against virus overall it may help to reduce mortality rate.

In covid-19 there may be disseminated intravascular coagulation that is thrombosis. The affected parts are lungs and terminally cardiac arrest, stroke and many other thrombo-embolic diseases may occur. In this condition there is a role of turmeric with calcium hydroxide in combination may act as antiviral, antioxidant, anticoagulant & immunity modulator which works in breathlessness and reduces mucus & inflammation in respiratory tract as anti-inflammatory effect. The combination reduces viral replication in this condition. With this combination of the turmeric along with calcium hydroxide and immunity booster may play important role in prophylaxis and therapeutic management of SARs CoV2 covid-19 corona virus.

Keywords: Ayurveda; Turmeric; Calcium Hydroxide; Ayurvedic Medicines; Immunity Modulators Prophylaxis Therapeutic Management; Sars Cov2 Covid-19 Corona Virus; Traditional Medicine; Acharyacharak; Vimansthan; Janapadodhawasana Chapter; Tiwra Pinas; Vata-Kaphapradhan Sannipataj Jawara; Aagneya in Guna

Introduction

Covid-19 corona virus (SARs-Cov2) 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

know there is no treatment or medicine has only evidence-based treatment for covid-19. Hence there is utmost need of clinical intervention by ancient traditional health science that is Ayurveda.

In Ayurveda text 'Acharya charaka has described in

'vimansthan' in 'janpadodhawansan' (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 Cov2. This disease is 'vata-Kaphapradhan sannipataj jwar' for this most of the medicines advocated are 'aagneya in guna' which may break the chain of virus and treat the disease [1,2].

The coronavirus is RNA virus (ribo nucleic 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 are not bacteria, so no antibiotic works in this disease at primary level. The 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 of immunity booster is to form the antibodies against the virus. In covid-19 complications other than pneumonia there may be disseminated intravascular coagulation (thrombosis). The affected parts are lungs & terminally cardiac arrest, stroke and many other thrombo-embolic diseases which may mainly cause pulmonary thrombosis (thrombo-embolism) [3].

The role of calcium hydroxide with turmeric powder extract may be very helpful in prophylaxis and therapeutic management of SARs Cov2 covid-19 corona virus.

Materials

Turmeric is a spice that has received much interest from both the medical/scientific worlds as well as from the culinary world. Turmeric is a rhizomatous herbaceous perennial plant (*Curcuma longa*) of the ginger family. The medicinal properties of turmeric, the source of curcumin, have been known for thousands of years; however, the ability to determine the exact mechanism(s) of action and to determine the bioactive components has only recently been investigated]. Curcumin (1,7-bis(4-hydroxy-3-methoxyphenyl)-1,6-heptadiene-3,5-dione), also called diferuloylmethane, is the main natural polyphenol found in the rhizome of *Curcuma longa* (turmeric) and in others *Curcuma* spp. *Curcuma longa* has been traditionally used in Asian countries as a medical herb due to its antioxidant, anti-inflammatory [4], anti-mutagenic, antimicrobial, and anticancer properties.

Curcumin, a polyphenol, has been shown to target

multiple signalling molecules while also demonstrating activity at the cellular level, which has helped to support its multiple health benefits. It has been shown to benefit inflammatory conditions, metabolic syndrome, pain, and to help in the management of inflammatory and degenerative eye conditions. In addition, it has been shown to benefit the kidneys. While there appear to be countless therapeutic benefits to curcumin supplementation, most of these benefits are due to its antioxidant and anti-inflammatory effects. Despite its reported benefits via inflammatory and antioxidant mechanisms, one of the major problems with ingesting curcumin by itself is its poor bioavailability which appears to be primarily due to poor absorption, rapid metabolism, and rapid elimination. Several agents have been tested to improve curcumin's bioavailability by addressing these various mechanisms. Most of them have been developed to block the metabolic pathway of curcumin in order to increase its bioavailability. For example, piperine, a known bioavailability enhancer, is the major active component of black pepper and is associated with an increase of 2000% in the bioavailability of curcumin. Therefore, the issue of poor bioavailability appears to be resolved by adding agents such as piperine that enhance bioavailability, thus creating a curcumin complex. Curcumin is being recognized and used worldwide in many different forms for multiple potential health benefits. For example, in India, turmeric-containing curcumin has been used in curries; in Japan, it is served in tea; in Thailand, it is used in cosmetics; in China, it is used as a colorant; in Korea, it is served in drinks; in Malaysia, it is used as an antiseptic; in Pakistan, it is used as an anti-inflammatory agent; and in the United States, it is used in mustard sauce, cheese, butter, and chips, as a preservative and a coloring agent, in addition to capsules and powder forms. Curcumin is available in several forms including capsules, tablets, ointments, energy drinks, soaps, and cosmetics. Curcuminoids have been approved by the US Food and Drug Administration (FDA) as "Generally Recognized as Safe" (GRAS), and good tolerability and safety profiles have been shown by clinical trials, even at doses between 4000 and 8000 mg/day and of doses up to 12,000 mg/day of 95% concentration of three curcuminoids: curcumin, bisdemethoxycurcumin, and demethoxycurcumin [5].

Mechanisms of Action

Antioxidant

Antioxidant and anti-inflammatory properties are the two primary mechanisms that explain the majority of the effects of curcumin on the various conditions discussed in this review. Curcumin has been shown to improve systemic markers of oxidative stress. There is evidence that it can increase serum activities of antioxidants such

as superoxide dismutase (SOD) A recent systematic review and meta-analysis of randomized control data related to the efficacy of supplementation with purified curcuminoids on oxidative stress parameters-indicated a significant effect of curcuminoids supplementation on all investigated parameters of oxidative stress including plasma activities of SOD and catalase, as well as serum concentrations of glutathione peroxidase (GSH) and lipid peroxides . It is noteworthy to point out that all of the studies included in the meta-analysis utilized some sort of formulation to overcome bioavailability challenges, and four out of the six used piperine. Curcumin's effect on free radicals is carried out by several different mechanisms. It can scavenge different forms of free radicals, such as reactive oxygen and nitrogen species (ROS and RNS, respectively); it can modulate the activity of GSH, catalase, and SOD enzymes active in the neutralization of free radicals; also, it can inhibit ROS-generating enzymes such as lipoxygenase/cyclooxygenase and xanthine oxidase [6,7].

Anti-Inflammatory

Oxidative stress has been implicated in many chronic diseases, and its pathological processes are closely related to those of inflammation, in that one can be easily induced by another. In fact, it is known that inflammatory cells liberate a number of reactive species at the site of inflammation leading to oxidative stress, which demonstrates the relationship between oxidative stress and inflammation. In addition, a number of reactive oxygen/nitrogen species can initiate an intracellular signaling cascade that enhances pro-inflammatory gene expression. Inflammation has been identified in the development of many chronic diseases and conditions. These diseases include Alzheimer's disease (AD), Parkinson's disease, multiple sclerosis, epilepsy, cerebral injury, cardiovascular disease, metabolic syndrome, cancer, allergy, asthma, bronchitis, colitis, arthritis, renal ischemia, psoriasis, diabetes, obesity, depression, fatigue, and acquired immune deficiency syndrome AIDS. Tumor necrosis factor α (TNF- α) is a major mediator of inflammation in most diseases, and this effect is regulated by the activation of a transcription factor, nuclear factor (NF)- κ B. Whereas TNF- α is said to be the most potent NF- κ B activator, the expression of TNF- α is also regulated by NF- κ B. In addition to TNF- α , NF- κ B is also activated by most inflammatory cytokines; gram-negative bacteria; various disease-causing viruses; environmental pollutants; chemical, physical, mechanical, and psychological stress; high glucose; fatty acids; ultraviolet radiation; cigarette smoke; and other disease-causing factors. Therefore, agents that downregulate NF- κ B and NF- κ B-regulated gene products have potential efficacy against several of these diseases. Curcumin has been shown to block NF- κ B activation increased by several different inflammatory stimuli. Curcumin has also been shown to suppress

inflammation through many different mechanisms beyond the scope of this review, thereby supporting its mechanism of action as a potential anti-inflammatory agent.

Side Effects

Curcumin has a long established safety record. For example, according to JECFA (The Joint United Nations and World Health Organization Expert Committee on Food Additives) and EFSA (European Food Safety Authority) reports, the Allowable Daily Intake (ADI) value of curcumin is 0–3 mg/kg body weight. Several trials on healthy subjects have supported the safety and efficacy of curcumin. Despite this well-established safety, some negative side effects have been reported. Seven subjects receiving 500–12,000 mg in a dose response study and followed for 72 h experienced diarrhoea, headache, rash, and yellow stool. In another study, some subjects receiving 0.45 to 3.6 g/day curcumin for one to four months reported nausea and diarrhoea and an increase in serum alkaline phosphatase and lactate dehydrogenase contents.

Calcium hydroxide

Calcium hydroxide (CH) and nano-calcium hydroxide (NCH) as intra-canal medicaments may affect the physical and chemical properties of dentin. The aim of this investigation was to evaluate the effects of CH and NCH on the micro hardness and superficial chemical structure of radicular dentin. Calcium hydroxide has been studied for many years. Herman in 1920 suggested calcium hydroxide for the treatment of dental pulp. The formula (Calxyl-Otto & CO; Frankfurt, Germany) was considered to be the pioneer in the use of calcium hydroxide, with addition of others substances. For Stanley a new era had begun. Calcium hydroxide encourages the deposition of a hard tissue bridge that usually protects the dental pulp. The ability to stimulate mineralization associated to the antimicrobial effectiveness confers on it the current success as an endodontic medication. However, well-conducted researches about the properties of calcium hydroxide, such as histo-compatibility, antimicrobial potential, physical-chemical aspects, give credibility to the choice of this medication in several clinical situations

Role of calcium hydroxide CaOH_2 + turmeric in combination

The pH of calcium hydroxide is 12.4. It acts as 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 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 steam 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 gets suppressed and the orange red carotene pigment becomes more prominent so turmeric turns into red. Turmeric extract has substantial antiviral in 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.

Discussion

Probable role of calcium hydroxide with turmeric powder in prophylaxis & therapeutic management of SARs CoV2 covid-19 corona virus

In this viral infection the most affected part is respiratory tract by developing pneumonia secondary complications by developing thrombosis, embolism which terminally leads to ischemic heart/brain disease. The ischemia causes due to less oxygen supplied (hypoxia) to heart and brain. In this viral infection corona virus 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 formed by the body. Turmeric is anti-hyperuricemic agent which may be effective in ischemia and congestive cardiac failure.

As curcumin is antiviral in combination with calcium hydroxide, its potency 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 they jointly form antibodies against corona virus. Turmeric is anticoagulant, so it may act as anticoagulant which prevents thrombosis, embolism. Turmeric is broad-spectrum inhibitor. It is also cardio-protective, 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 alleviates cough. Curcumin

deoxygenates 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, anti-parasitic, antibacterial, antifungal. Calcium hydroxide and curcuma exhibited the antiviral activity may reduce viral RNA expression, protein synthesis and viral titre. In addition it may have protective effect on cells against virus induced adapt apoptosis and cytopathic activity.

This combination inhibits replication of virus by inhibiting viral binding at the cell surface, viral replication tool or suppression of cellular signalling pathway essential for viral replication such as PI3K, AKT, NF- κ B immune. This combination improves cognitive ability to boost the absorption of proteins by the body. This combination is a powerful antioxidant. Antioxidants scavenge damaging particles in the body known as free radicals which damage cell membrane, temper DNA and even cause cell death. Antioxidants can neutralize free damage they cause. In addition, this combination of calcium hydroxide and turmeric powder extract reduces inflammation by lowering level of inflammatory enzymes (Cox2 and lipoxygenase) in the body and stops platelets from clumping together to form thrombosis. The combination of calcium hydroxide and turmeric powder as it is an 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 a major role as prophylaxis and therapeutic management in SARs CoV2 covid-19 corona virus.

Conclusion

The turmeric and calcium hydroxide in combination may play an important role in prophylaxis and therapeutic management of SARs CoV2 covid-19 corona virus.

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