



INTERNATIONAL RESEARCH JOURNAL OF HUMANITIES AND INTERDISCIPLINARY STUDIES

(Peer-reviewed, Refereed, Indexed & Open Access Journal)

DOI : 03.2021-11278686

ISSN : 2582-8568

IMPACT FACTOR : 5.71 (SJIF 2021)

INDIAN SPICES: PACKAGES OF ANTIOXIDANTS WITH POTENTIAL USE IN REHABILITATION PROCESS FROM COVID-19

Dr. Neelam Jirage

Assistant Professor
College of Non-Conventional Vocational
Courses for Women, CSIBER Kolhapur
E-mail: neelamjirage1@gmail.com

Mrs. Shweta Patil

Assistant Professor and Head,
Department of Food Technology,
College of Non-Conventional Vocational
Courses for Women, CSIBER Kolhapur
Email: shweta310388@gmail.com

DOI No. **03.2021-11278686** DOI Link::<https://doi-ds.org/doi/10.2582/08.2021-58942315/IRJHISICPC210815>

ABSTRACT:

India is known for its varied Food System all over the globe. Though the difference lies in staple foods of different parts of India, one common thing in Indian cuisine is nothing but the use of Spices. Indian spices are always a centre of attraction particularly for western people. In Indian Kitchens, spices are basically used for enhancing colour, odour, taste and flavour of a particular food prepared. Spices are used medicinally since ancient times. India is the largest producer of spices. There are almost 80 varieties of spices grown all over the world. And around 50 varieties are grown in India. Since last decade, the Indian spices are gaining too much popularity for its medicinal values because of their physiological and pharmacological properties. The antioxidant properties exhibited by the active ingredients of spices are vital in terms of disease prevention, treatment as well as rehabilitation. Since last year the world is facing the pandemic situation due to COVID-19. Recovery period from COVID-19 and the health related consequences during and after recovery phase depends upon the health and nutritional status of an individual. Post COVID complications are deteriorating for the health and so the quality of life of the affected ones. Health and Nutritional status relies on the Food consumption pattern. Food is the major factor to be considered which when carefully planned can help to recover and rehabilitate from COVID-19 infection. The present review focuses on some of the Indian spices with their potential applications in Rehabilitation process from COVID-19. The study includes following spices- Turmeric, Ginger, Garlic, Basil Leaves, Cinnamon, Cardamom, Bay Leaf, Celery Leaves.

Keywords: Food system, Indian Cuisine, Indian Spices, Medicinal properties, antioxidant, rehabilitation, pandemic, Post COVID complications.

INTRODUCTION:

India is widely known for its diversity in food. Due to geographical and climatic differences, the locally grown crops and animals grazed on them are different in different regions of the country. So the major differences are seen in staple foods, food consumption pattern, eating habits, food preferences and choices. Despite of having all these differences, Indian cuisine has one thing in common i.e. use of spices. Indian spices gives unique identity to the Indian food and varied meal preparations. There are almost 80 varieties of spices grown throughout the world. Amongst them, almost 50 are grown in India. So India is one of the largest producers of Spices. Spices are basically used in the food preparations to enhance its colour, odour, aroma and taste. Spices are the inseparable part of Indian Kitchens since ancient time. Indian medicine system i.e. Ayurveda also emphasizes the medicinal properties of spices which can be used as diuretic, eccoprotic, carminative aperients, expectorant and many more.

Since last two years world is facing pandemic situation due to COVID-19 virus. The overall mortality rate is increasing since second wave has been approached. When it comes to morbidity, it is the main factor which is responsible to deteriorate health of an affected one. Morbidity hampers quality of life. It is the reason the individual relies on medications for longer duration. The side effects imposed by medications are detrimental to health. This also reduces the productivity of an individual and puts extra economic burden. Individual with good health and nutritional status recovers early and rehabilitation process requires less use of medications. Thus minimizing the subsequent side effects.

Indian spices are originally known for their physiological and pharmacological properties. The active ingredients present in the spices are known for different beneficial effects on health. Some spices contain the active ingredients with antioxidant properties. Antioxidants prevents the damage caused by free radicals by neutralizing them. They give protection to the body cells. Systemic inflammation is observed in the body in many pathological processes. This damages the body cells. Viral infection is one of the major cause behind systemic inflammation. It is evident by increased C-reactive protein values in COVID affected individuals. And thus the individual's immune system gets suppressed making that individual susceptible to many of secondary bacterial infections. The severity of the post COVID infections depends upon the strong antioxidant system present in one's body. Also it can be enhanced by properly managed diet plan with inclusion of potentially useful antioxidants in the diet. Spices group is one of the major group which possess antioxidant properties. Some of the critical spices are discussed here with subsequent role in COVID rehabilitation.

TURMERIC:



The major compounds found in turmeric are saponins, alkaloids, sterol, tannin, flavonoids, phytic acid and phenol. It is mainly used as anti-inflammatory agent. It is also used in the diet for its healing and anti-bacterial, anti-septic properties. Turmeric possesses antioxidant properties and thus is the dominant inhibitor of tissue injury and swelling. One of the major properties of turmeric is anti-proliferative. Thus turmeric has many therapeutic uses too like for example- to treat ulcers, parasitic contaminations, different skin infections, against resistant illness and restoring the manifestations of colds and flu. The pharmacological properties have been mainly attributed to the presence of curcumin in the turmeric. The two related compounds present are demethoxycurcumin and bisdemethoxycurcumin. The mitigating impact of curcumin incorporates the hindrance of TNF- α -instigated activation of NF κ B. A few examinations have demonstrated that curcumin can adjust the capacity of human lymphocytes i.e. T cells and B cells.

Thus turmeric should be used daily in meal preparations to maintain immune status. A cup of hot milk along with a pinch of turmeric if taken daily, can help to maintain health of respiratory system. So the people with proper use of turmeric in every-day's diet probably suffer less and survive promptly in COVID 19 infection.

GINGER:



Ginger is one of the most common condiments consumed throughout the world. At least 115 constituents have been identified in fresh as well as in dry ginger. The most common bioactive compound present in ginger is gingerol, a pungent ingredient known for its varied pharmacological and physiological activities. The therapeutic use of ginger is known to mankind since long time. It is used to treat thousands of ailments from cold to cancer. There is scientific evidence for the effectiveness of ginger as an antioxidant agent. The presence of oxidative stress is

associated with many diseases. Ginger was reported to decrease this oxidative stress. Ginger root contains high level of (3.85 mmol/100g) total antioxidants. Many reports indicate that ginger

suppresses lipid peroxidation and protects reduced level of glutathione. A dried ginger extract is reported to exhibit analgesic and potent anti-inflammatory effects. Antiemetic effect of ginger is attributed to its carminative property, which helps to break up and expel intestinal gas and thereby reducing the nausea and vomiting.

Research suggests that administration of 120 mg of ginger extract daily for up to 21 days increases the number of days without ventilator support and reduces the time spent in intensive care units in individuals with respiratory distress. Nausea, vomiting imposed by the medications can be reduced with the ingestion of ginger. Early research shows that taking ginger by mouth might help reduce pain and improve wound healing.

GARLIC:

Garlic is a popular spice and a remedy for a variety of ailments. Garlic has played important dietary and therapeutic roles since ancient times. Potentially active chemical constituents of garlic are: sulphur compounds, enzymes like allinase, peroxidase, myrosinase and others; amino acids and their glycosides like arginine; Minerals like -Se, Ge, Te and other trace minerals. The principal bioactive component present in garlic is allicin. When the garlic is crushed or chopped; allinase



enzyme is activated and produce allicin from alliin. Research has proven the antimicrobial, antifungal, anti-atherosclerotic, anti-diabetic, anti-tumour, anti-protozoal and anti-viral effects of garlic. A single trial suggested that garlic may prevent occurrence of common cold. Whole garlic and garlic extract exhibit direct antioxidant effects and increase the serum levels of antioxidant enzymes like catalase and glutathione peroxidase. Allicin present in garlic can efficiently scavenge exogenously generated hydroxyl radicals. A recent study suggests that aged garlic extract inhibits formation of glycation end products (AGE) in vitro and formation of glycation-derived free radicals. Garlic and its constituents protect tissue against oxidative damage and improve organ functions in various animal models.

Daily use of garlic in meal preparations helps to strengthen immune power of COVID affected ones. The garlic cloves can be chewed on daily basis (1 clove per day) by COVID affected individuals during convalescence phase for early recovery.

BASIL LEAVES:



Basil leaves is an essential ingredient in many cooking practices and traditions. Basil leaves are known for its aroma. The vitamin A content of basil leaves is significantly high. i.e. 2.5 gms of basil leaves (five fresh leaves) contains 96.6 IU vitamin A. Also is a good source of calcium, potassium and vitamin C. Basil leaves contains volatile oils comprised of phenols, terpenes and aldehydes. Besides these oils, plant also

contains alkaloids, glycosides, saponins and tannins. Basil leaves contains high levels of antioxidants and minerals. Thus, imposing many health benefits. There are no standards or recommendations for amounts to be used. Basil leaves has many properties like insecticidal, prophylactic agent, anti-cancer activity, anti-microbial activity, anti-pyretic activity, anti-diabetic activity and so on.

Eugenol, present in basil leaves is responsible for anti-inflammatory response of basil leaves. It diminish inflammation by stopping the release of pro-inflammatory cytokines.

The essential oils of basil leaves alter the humoral immune response which is responsible to antigen-antibody reaction. Basil bolsters immune reaction by improving both cellular and humoral immunity. The phenolics that is flavonoids [orientin and vicenin] present in basil leaves are responsible for anti-oxidant effect.

Basil leaves can be incorporated in soups, stews and stuffings. It can also be used in fish and meat preparations. Basil tea is one of the best beverage can be taken on daily basis by COVID patients for good results.

CINNEMON:



Cinnamon leaves and bark are widely used as spices in food or to produce essential oils. Research have proven the antioxidant, antimicrobial and antidiarrhoeal activity of the Cinnamon. The active ingredients present in Cinnamon are Rutin, Catechin, Quercetin, Kempferol and isorhamnetin. Cinnamon has flavonoids and polyphenols that have free radical quenching capacity. There are several studies indicating the anti-

inflammatory activity of the cinnamon and its essential oils. The several flavonoid compounds like

gossypin, gnapthalin, hesperidin, hibifolin, hypolaetin, oroxindin, and quercetin present in the cinnamon have been noted with anti-inflammatory effects.

COVID infection is responsible for the generation of proinflammatory cytokines and chemokines and also the complement protein activation. Thus the diet with regular inclusion of spices like cinnamon with antioxidant and anti-inflammatory activity will speed up the process of rehabilitation in COVID patients.

CARDAMOM:



The active ingredient present in Cardamom is Cineole. The Cineole is known for its antiseptic property and widely used to treat the variety of ailments including acute respiratory disorders, sore throat, colds, fever, bronchitis.

The most proven health benefit of Cardamom is its antibacterial activity. The essential oil of cardamom shows the potent antibacterial activity against *Staphylococcus aureus*, *Bacillus cereus*, *Escherichia coli*, and *Salmonella typhi* microorganisms. The antifungal activity of cinnamon is also been proven against food borne *Aspergillus terreus*.

Secondary bacterial infections as well as fungal infections are commonly seen in COVID patients. To overcome these secondary infections, dietary inclusion of spices like cardamom is crucial. Rehabilitation process speeds up with inclusion of such bioactive components in the daily diet of COVID patients. Cardamom can be incorporated in wide meal preparations; both vegetarian and non-vegetarian.

BAY LEAF:

Bay leaf contains following compounds as active ingredients- eucalyptol, terpenes, terpinyl acetate, sesquiterpenes, methyleugenol and other alpha and beta pinenes, phellandrene, linalool, geraniol, terpineol and lauric acid. Antioxidant

properties of bay leaf extract are imposed by the phenolic compounds present in it.



The health benefits of bay leaf are attributed to the presence of phenolic compounds and certain minerals. Researchers do not have any particular recommendations about the specific amount to be consumed to get the good results. Bay tea is commonly consumed to clear up the mucus in the lungs, colds and sore throat. Bay leaf decoction can be used on daily basis to strengthen immune power to prevent or minimize infections. No data is available on its exact

dose or amount to be consumed. But tea or decoction in combination with other spices like cinnamon may help to enhance the antioxidant effect and can be advised for the easy rehabilitation of COVID patients.

CELERY LEAVES:



Celery leaves possess a strong antioxidant activity and several health benefits because of the bioactive ingredients present in it. i.e. caffeic acid, p-coumaric acid, ferulic acid, apigenin, luteolin, tannin, saponin and kampferol. The phenolic compounds present in celery leaves are the great source of antioxidants. They exhibit an anti-inflammatory effect too. Many researches on celery leaves have shown its action on production of cytokines in the body during

infections. It helps to reduce the production of inflammatory cytokines. The effects are evident due to presence of phenolic compounds in the celery leaves. This also attributes the wide application of celery leaves in nutraceutical industry.

Celery leaves can be incorporated in variety of meals, both vegetarian and non-vegetarian. Soups of celery leaves can be prepared. The salad can be made by using celery leaves. It can be mixed with the breakfast shake. It also can be added to the beans, egg preparations and so on. Everyday celery decoction can be helpful in COVID patients in rehabilitation process.

CONCLUSION:

The Indian spices are traditionally known for its culinary as well as therapeutic uses. The bioactive components present in the spices impose many health benefits. Antioxidant and anti-inflammatory properties of spices suffice its application in rehabilitation process of COVID patients.

Secondary bacterial infection, compromised immunity, deranged health and nutritional status can prolong the recovery of COVID patients. To achieve proper rehabilitation and to reduce subsequent morbidity, the foods with antioxidant and anti-inflammatory effects can be included in the daily diets of COVID patients. Spices are the abundant source of antioxidants and thus can be used in different meal preparations of COVID patients to get desired health benefits.

REFERENCES:

1. Mashhadi N.S et al, (2013), Anti-Oxidative and Anti-inflammatory effects of Ginger in Health and Physical Activity: Review of Current Evidence, International Journal of Preventive Medicine, S36-S42
2. Bayan L. et al (2014), Garlic: a review of potential therapeutic effects, Avicenna Journal of Phytomedicine, 1-14
3. Susan J., et al (2017), Curcumin: A Review of its Effects on Human Health, 6(10):92
4. Sharifi-Rad J., et al (2020), Turmeric and its major compound curcumin on health: Bioactive effects and safety profiles for Food, Pharmaceutical and Medical Applications
5. Batool S. et al (2020), Bay Leaf, Medicinal Plants of South Asia, 63-74
6. Rao P.V, Gan S.H., (2014), Cinnamon: A Multifaceted Medicinal Plant, Hindawi.
7. Korikanthimathm VS., et al (2001), Medicinal Properties of Elettaria Cardamomum
8. Kooti W., Daraei N., (2017) A Review of the Antioxidant Activity of Celery (*Apium graveolens* L), 1029-1034
9. Cohen M., (2014), Tulsi- *Ocimum sanctum*: A herb for all reasons, Journal of Ayurveda and Integrative Medicine, Elsevier, 251-259
10. Global Research on coronavirus disease (COVID-19), <https://www.who.int>
11. Scientific papers and resources on COVID-19, Pan American Journal of Public Health, <https://www.paho.org>

IRJHIS