



Asian Journal of Research in Biological and Pharmaceutical Sciences

Journal home page: www.ajrbps.com

<https://doi.org/10.36673/AJRBPS.2024.v12.i01.A01>



A CASE STUDY ON THE PRACTICE OF CURCUMA LONGA DURING COVID-19

Velu Vijaya*¹, Baskar Muthu², Balan Karunai Selvi³, Mariappan Uma Maheswari⁴

¹*Department of Botany, E.M.G. Yadava Women's College, Madurai- 625014, Tamil Nadu, India.

²Department of Zoology, E.M.G. Yadava Women's College, Madurai- 625014, Tamil Nadu, India.

³Department of Botany, V.V.Vanniaperumal College for Women, Virudhunagar – 626001, Tamil Nadu, India.

⁴Department of Mathematics, V.V.Vanniaperumal College for Women, Virudhunagar-626001, Tamil Nadu, India.

ABSTRACT

The usage of turmeric in Indian medicine has been widespread since ancient times. A case study was carried out in order to know the perception and use of turmeric during COVID-19 among faculty and students at the college. The findings revealed that 75% of the respondents knew the binomial name of turmeric is *Curcuma longa* and 68% of them respondents knew that it belongs to the ginger family Zingiberaceae. 96% of participants agreed that the active element, curcumin, has been associated with reduced symptoms of many inflammation-driven conditions and could help diminish the swelling and irritation produced by allergic rhinitis. 97% of the participants responded they had recommended turmeric to others to lead a healthy lifestyle. Most respondents knew that turmeric has numerous health benefits, like reducing inflammation, healing internal injuries and helping to ward off flu during the winter season. Studies indicate that Turmeric is an essential ingredient in traditional Indian cuisine.

KEYWORDS

Turmeric, *Curcuma longa*, COVID-19, Manjal and Antibiotic.

Author for Correspondence:

Karunai Selvi B,

Department of Botany,

V.V.Vanniaperumal College for Women,

Virudhunagar, Tamil Nadu, India.

Email: karunaiselvi@vvvcollege.org

INTRODUCTON

Coronavirus disease 2019 (COVID-19) is an epidemic disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) with considerable mortality worldwide. The main clinical manifestation of COVID-19 is respiratory symptoms, but in some patients, it has developed severe cardiovascular and renal complications. During the COVID-19 pandemic, people rely on their immune system to protect themselves from this virus. One of the greatest components that can boost our immune power is turmeric, (*Curcuma*

longa) belonging to the Zingiberaceae family, which is one of the most useful herbal medicinal plants (Nasri *et al*, 2014)¹. Turmeric is an ancient golden spice of Asia, it was traditionally used for many remedies (Ammon and Wahl 1991)². The primary source of curcumin linear diarylheptanoid (Manju *et al*, 2008)³, the phenolic compound obtained from its rhizome has antioxidant, anti-inflammatory, anti-cancer, and anti-diabetic activity (Hatcher *et al*, 2008; Rudrappa and Bais, 2008; Xu *et al*, 2018)⁴⁻⁶. Besides, it acts as an antiviral agent (Mathew and Hsu 2018)¹⁰ and studies showed that turmeric can be helpful for both the prevention and treatment of COVID-19 (Wang *et al*, 2020; Zhu *et al*, 2019)^{8,9}. Even though we use turmeric as a traditional herbal medicine, and it possesses the potential effect against COVID-19, myths and confusions about the usage of turmeric for the prevention and cure of the COVID-19 virus are revolving (Liu and Ying 2020)¹⁰. Hence this present study was planned to conduct a case study about the usage of *Curcuma longa* during the COVID-19 situation.

METHODOLOGY

The present study was conducted to assess the awareness about turmeric among the students and faculties of the 18-58 age groups at EMG Yadava Women's College, Madurai, and V.V. Vanniaperumal College for Women, Virudhunagar. Primary data were collected through a structured questionnaire using convenience sampling. Due to the pandemic situation, questions were created on Google form and forwarded to the participants through online mode. Twenty-five questions were framed based on the knowledge of *Curcuma longa*, its usage in day-to-day life, its intake as medicine and its preventive mechanism for the COVID-19 virus (<https://forms.gle/Jk3DTaY7iWkjLf3B6>). Based on the responses given by the respondents, the results were analyzed and represented in percentages. Also, the data collected from the respondents were statistically analyzed with various tests using SPSS tools.

RESULTS AND DISCUSSION

Turmeric is extensively grown in the tropics, with several names in many places. It is an essential

spice all over the world for diverse practices by humans; particularly among Eastern people (Araujo and Leon 2001)¹¹. The respondents knew the universal name is 'turmeric' and the indigenous Tamil name is "Manjal". 75 percent of the respondents knew the binomial name of turmeric is *Curcuma longa*, and 68 percent of the respondents knew that *Curcuma longa* belongs to the ginger family *Zingiberaceae*. 12 percent of respondents have answered that it belongs to the family Cannaceae or Liliaceae because of the presence of a rhizome. 99 percent of the respondents had an awareness of the morphology of its useful part, which is mainly cultivated for its tuberous rhizome. Only 39 percent of the respondents properly pointed out that *Curcuma longa* is cultivated more in Maharashtra and India. Among the other options, Erode, a district in Tamil Nadu, India, was thought to be the chief producer by over 46 percent of the participants. 44 percent of the participants answered that *Curcuma longa* rhizomes were harvested once a year in January. Around 68 percent of the participants knew the harvesting month of its rhizomes. 84 percent of the participants were aware of the chemical compound curcumin, and this particular compound is responsible for numerous health benefits. Only 11.7 percent of participants agreed that it was from Kerala (Mathai, 1976)¹². More than 88 percent of participants knew that turmeric earns greater foreign exchange for India. 90% of participants agreed with this view, the most significant quality of turmeric is believed to be its antibacterial nature and the potential to treat cancer and ulcers. 65 percent of the participants agreed on this aspect (Moghadamtousi *et al*, 2014)¹³. More than 86 percent of participants knew curcumin is a potent antioxidant that can overcome free radicals. More than 70 percent of participants have insight into this aspect. More than 81 percent of the participants knew about turmeric's potential to cure gastrointestinal diseases. 85 percent of participants answered correctly when questioned about the anti-cancer character of turmeric. More than 91% of the participants know the skin-protection properties of turmeric from our traditional practice. Around 99 percent of the participants knew about the wound-healing properties of turmeric. Around 95% of the participants are using turmeric as medicine during

COVID-19. 42% of the participants take turmeric every day. 10% of them take turmeric 5 days a week; 37% of them take turmeric 3 days a week; and 11% use it one day per week. The intake of turmeric with its combination varies according to their needs, as reflected in the responses, as 27% of them take turmeric along with neem, 33% take turmeric along with milk, and 5% of them consume turmeric extract or powder. The combination of pepper increases the effect of curcumin up to 2000 times; 35% of them intake turmeric along with pepper and garlic in milk. 98 percent of participants used turmeric in their daily cooking. 76% of participants noticed positive changes in their overall health after consuming turmeric in their diet. 96% of participants consider turmeric a universal remedy in Siddha and Ayurveda herbal preparations. 97% of the participants responded that they recommend turmeric to others to lead a healthy lifestyle.

STATISTICAL ANALYSIS

The statistical analysis made in this study asserts that there is enough knowledge about the medicinal values of turmeric, and the results after its usage are considered statistically significant at $p < 0.01$, $p < 0.05$. The data were analyzed with SPSS (Statistical Package for the Social Sciences).

Cross-tabulation between the questions How many days a week do you take turmeric as medicine? and Do you use turmeric as a medicine during Corona? (Table No.1) The calculated value of the chi-square test is 7.925, which is significant as its p-value is less than 0.05 ($0.048 < 0.05$) at a 5 percent level of significance. Thus, it is proven that there is a significant relationship between the usage of turmeric powder and the frequency of using turmeric powder. It is concluded that as the frequency of using turmeric powder increases, Corona disease will be avoidable. Thus, turmeric powder is one of the antibiotics used to prevent Corona disease.

Cross-tabulation between the questions Can you recommend to others the magnificence of turmeric? And have you noticed any positive changes in your body while consuming turmeric? (Table No.2) It is also significant at the 5% level. While consuming turmeric powder, respondents notice changes in

their bodies, so every respondent recommends turmeric powder to others.

Cross-tabulation between the questions Can you recommend to others the magnificence of turmeric? Do you consider turmeric a universal remedy? (Table No.3). It is also significant at the 5% level. Respondents consider turmeric a universal remedy, so they recommend others use it as a home remedy. Anova was calculated for turmeric, which provides relief for heart disease and diabetes and eliminates jaundice and gastro-intestinal diseases (Table No.4). Values were calculated between and within the groups. The calculated value is 6.452 greater than the table value (3.84). So, the relationship between and within groups is significant at the 5% level.

Discussion

In the northern parts of India, turmeric is generally called "Haldi," a term that evolved from the Sanskrit term "haridra". The name turmeric is derived from the Latin phrase 'terra merita', meaning meritorious earth, relating to the color of ground turmeric, which resembles a mineral pigment (Bhowmik *et al*, 2009)¹⁴. The useful part of *Curcuma longa* is the secondary rhizomes (long turmeric), 0.5-1.5cm thick, elongated, indistinctly ringed and simple or sparingly branched. More than 80% of the world's turmeric is produced in India; predominantly, the chief producing states are Telangana, Maharashtra and Tamil Nadu. Currently, Maharashtra leads other states in turmeric production. Turmeric is an herbaceous perennial plant; rhizomes are planted in September or October and are harvested after 10 months. More than 100 chemical components have been isolated from turmeric; among them, one of the most significant and a remarkable component is curcumin. Extensive research has proven that most of the turmeric activities are due to curcumin (Nasri *et al*, 2014)¹. The percentage of curcumin in turmeric varies from species to species, and it grows in different states. It has been noted that a high curcumin content of 6.5 percent is cultivated in Kerala (Mathai, 1976)¹². In the year 2019, India exported over 190 million US dollars worth of turmeric, which shows it plays a prominent role in Indian foreign exchange. Turmeric provides numerous health benefits, along with rich color and taste in food. It can be added to foods, including rice and bean dishes, to improve

digestion and reduce gas and bloating (Bhowmik *et al*, 2009)¹⁴. Curcumin (3-4%) is responsible for the yellow color and comprises curcumin I (94%), curcumin II (6%), and curcumin III (0.3%). The chemical complex of curcumin encourages the action of our body's own antioxidant enzymes. Curcumin improves the function of the endothelium, the inner lining of our blood vessels; its dysfunction causes heart illnesses. The effect of turmeric on cholesterol levels may be due to decreased cholesterol uptake in the intestines and increased conversion of cholesterol to bile acids in the liver (Nasri *et al*, 2014)¹. Curcumin reduces inflammation and oxidation, which play a role in heart syndromes as well. Because of its anti-inflammatory and antioxidant effects, turmeric supplements may aid with blood sugar control in men with type 2 diabetes. Turmeric is well-known as a powerhouse of anti-inflammatory properties; its active element, curcumin, has been associated with reduced symptoms of many inflammation-driven conditions. It could also help to lessen the swelling and irritation produced by allergic rhinitis. Further recommended for abdomen infection causing gastrointestinal ulcers by a microbe called *Helico bacterpylori*, chronic ingestion of NSAIDs and external materials such as cigarettes, liquor and fast foods. Turmeric is a natural remedy that could be utilized to treat the inflammation caused by the ulcer effect. The anticancer actions of turmeric include inhibiting cell proliferation and promoting the apoptosis of cancer cells. Ar-turmerone isolated from turmeric induced apoptosis in human leukemia Molt 4B and HL-60 cells, a recognized step in the process of apoptosis (Aratanechemuge *et al*, 2002)¹⁵. Turmeric is hoped to be one of the key factors in cancer prevention and anticancer therapy. This golden spice is recognized for its anti-inflammatory and antioxidant properties (Liu *et al*, 2018)¹⁶ and has been adopted for beauty treatments of many issues, including hyperpigmentation, sunspots, acne, and scars. Turmeric blocks the overproduction of melanin produced by prolonged sunlight exposure. Continuous usage of homemade turmeric face masks not only reduces skin pigmentation but also inhibits its deterioration. Life science scientists assure the recommendation of applying turmeric to heal wounds and block further

infection. The medicinal properties of turmeric are due to the presence of curcumin (1, 7-bis(4-hydroxy-3-methoxyphenyl)-1, 6-heptadiene-3, 5-dione), which is the main natural polyphenol found in the rhizome of *Curcuma longa*. It has been traditionally used in Asian countries as a medical herb due to its anti-oxiant, anti-inflammatory, antimutagenic, antimicrobial and anticancer properties. It can be taken as a single extract or in the form of digestive bitters, which combine turmeric with other bitter and carminative herbs. Turmeric is beneficial for people who feel tired after consuming meals or who experience gas and bloating. Whatever consumption of turmeric is beneficial to both the digestive system and the liver regular use of turmeric can help with colitis, Crohn's disease, diarrhea and post-giardia or post-salmonella conditions. The itching and inflammation that accompany hemorrhoids and anal fissures can be reduced using turmeric. Turmeric can also benefit skin conditions, including eczema, psoriasis and acne; for those, it is a potent detoxifier. In India, turmeric is considered a symbol of prosperity, fertility, and purity; overall, it is a cleansing herb (Bhowmik *et al*, 2009)¹⁴.

Table No.1: Cross tabulation between turmeric as a medicine and number of days to intake

S.No	Cross Tabulation		Do you use turmeric as a medicine during corona?		Total
			Yes	No	
1	How many days a week do you take turmeric medicine?	1 day	25	4	29
		3 days	89	2	91
		5 days	25	0	25
		7 days	98	6	104
2	Total		237	12	249
3	Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	
4	Pearson Chi-Square	7.925 ^a	3	0.048	
5	Likelihood Ratio	7.819	3	0.050	
6	Linear-by-Linear Association	0.240	1	0.624	
7	N of Valid Cases	249	-	-	
8	It is Significant at 5% level				

Table No.2: Cross Tabulation between positive changes in the body while consuming turmeric as medicine and recommendation of turmeric to others

S.No	Cross Tabulation		Have you noticed any positive changes in your body while consuming turmeric?				Total
			Good change	Moderate change	Negative change	No change	
1	Can you recommend to others about the magnificence of turmeric?	Yes	187	48	0	7	242
		No	3	1	2	1	7
2	Total		190	49	2	8	249

S.No	Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)
1	Pearson Chi-Square	73.054 ^a	3	0.000
2	Likelihood Ratio	17.169	3	0.001
3	Linear-by-Linear Association	11.801	1	0.001
4	N of Valid Cases	249		
5	It is Significant at 5% level			

Table No.3: Cross Tabulation between recommendation of turmeric to others and turmeric as universal remedy

S.No	Cross Tabulation		Do you consider turmeric as a universal remedy?		Total
			Yes	No	
1	Can you recommend to others the magnificence of turmeric?	Yes	233	9	242
		No	5	2	7
2	Total		238	11	249

S.No	Chi-Square Tests	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
1	Pearson Chi-Square	9.951 ^a	1	0.002		
2	Continuity Correction	4.936	1	0.026		
3	Likelihood Ratio	4.849	1	0.028		
4	Fisher's Exact Test				0.033	0.033
5	Linear-by-Linear Association	9.911	1	0.002	-	-
6	N of Valid Cases	249	-	-	-	-
It is Significant at 5% level						

Table No.4: ANOVA

S.No			Sum of Squares	df	Mean Square	F	Sig.
1	Turmeric can provide relief for heart and diabetes	Between Groups	1.324	1	1.324	6.452	0.012
		Within Groups	50.684	247	0.205		
		Total	52.008	248			
2	Eliminate jaundice gastro-intestinal diseases	Between Groups	0.813	1	0.813	5.381	0.021
		Within Groups	37.316	247	0.151		
		Total	38.129	248	-		

It is Significant at 5% level

CONCLUSION

Turmeric is found to be very effective in treating allergies like sneezing, runny nose and sinus congestion. Consuming a spoonful of turmeric in a glass of water has the potential to alleviate the mentioned ailment or infection within a few days. Turmeric is found to thin the blood concentration, so people who take blood thinners should exercise caution when taking turmeric as medicine. External application of turmeric paste is effective in reducing swelling and inflammation, promoting rapid healing of wounds, and treating acne. Application of turmeric and neem leaf paste in affected areas to get rid of ringworm, itching and eczema. It can be used after surgery to reduce pain and inflammation and accelerate healing. Research is still in progress to prove scientifically what the Indians knew in the earlier centuries: Turmeric is one of the most powerful herbs on this planet.

ACKNOWLEDGEMENT

The authors wish to express their sincere gratitude to E.M.G Yadava Women's College, Madurai, Tamil Nadu, India and the V.V.Vanniaperumal College for Women, Virudhunagar, Tamil Nadu, India for providing the necessary facilities to carry out this research work.

CONFLICT OF INTEREST

We declare that we have no conflict of interest.

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Please cite this article in press as: Velu Vijaya et al. A case study on the practice of *Curcuma longa* during COVID-19, *Asian Journal of Research in Biological and Pharmaceutical Sciences*, 12(1), 2024, 1-7.