



Case Report

A case report of moderate COVID 19 patient managed through integrative approach (Siddha and conventional medicine)



B. Neethi*, P. Shanmugapriya, G. Janaranjani, S. Gokila, B. Prathisha, J.K. Jayasree

Dept. of Nanju Maruthuvam, National Institute of Siddha, Chennai, India

ARTICLE INFO

Article history:

Received 22 September 2021

Received in revised form

6 June 2022

Accepted 27 June 2022

Available online 4 July 2022

Keywords:

Siddha

COVID 19

Integrative management

Case report

ABSTRACT

Introduction: COVID 19 is a rapidly spreading disease with high mortality and morbidity all over the world which is caused by SARS-COV-2. Siddha system has various formulations with antiviral properties. The study is aimed at evaluating the efficacy of Siddha integrated with conventional medicine for effective management of COVID 19.

Case summary: A 61 year old male patient diagnosed with COVID was brought in with the complaints of fever, cough, loss of smell, taste, tiredness and breathlessness after 7 days of infection. History revealed that he has not taken any treatment for the past 7 days and therefore presented with pneumonia at the time of consultation. Laboratory investigations showed Neutrophilia, Lymphocytopenia, raised NLR ratio, elevated CRP and D-Dimer. CT chest revealed CORADS-5 and severity score was 10/25. The patient was treated with Siddha medicine from 8 th Day. The patient had taken conventional treatment on 12 th day for 3 days only. Patient showed good improvement on 23 rd day and no adverse effect observed during the course of treatment.

Conclusion: This case report demonstrates that moderate COVID 19 can be managed with integrative approach.

© 2022 The Authors. Published by Elsevier B.V. on behalf of Institute of Transdisciplinary Health Sciences and Technology and World Ayurveda Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

COVID-19 is a public health crisis which threatens the world by its rapid spread and mortality. WHO declared the outbreak of COVID-19 as a Public Health Emergency of International Concern on 30th January 2020 [1]. More than two million deaths have been associated with COVID-19 infection and the fatality rate is more than 5% around the world by the end of Jan2021 [2]. During the second wave of COVID-19, there was a catastrophic rise in cases, hospitals were overwhelmed and scarcity of medical equipment and beds become a major problem [3]. Management of COVID-19 infection mainly includes antivirals, corticosteroids, immunomodulatory drugs and oxygen support [4,5]. Globally various research works have been done by researchers, but till now there is no effective treatment available for COVID-19. During the first wave of COVID-19, Siddha system of medicine played a vital role in lowering the disease burden by earlier virologic clearance and thereby reducing the length of

hospital stay [6,7]. The clinical manifestations of COVID-19 viral infection may be compared with “Kabasuram [8]” for the treatment of which various formulations are mentioned in the Siddha literature. Scientific evaluation of these formulations also revealed that they had antiviral properties. In this case report, an outcome of Siddha intervention along with conventional medicine in a moderate COVID-19 infected patient is discussed which emphasizes the significance and safety of Siddha integrative approach in the management of COVID-19 viral infection.

2. Case presentation

2.1. Patient information

61-year-old male, a Lecturer, staying at Ariyalur, Tamil Nadu, India.

2.2. Medical history

On DAY 1 the patient had a mild fever, headache and tiredness. He did not take any medication for it. On 3rd day, the fever worsened. The

* Corresponding author.

E-mail: neethi.nthi@gmail.com

Peer review under responsibility of Transdisciplinary University, Bangalore.

patient took Nilavembu kudineer on his own. After that, patient was apparently normal for 3 days. On the 7th day, he experienced symptoms of fever, dry cough, tiredness, loss of appetite, smell and taste. The patient reported at the Siddha clinic on Day 7. Siddha intervention was started on Day 8.

2.3. Past medical history

The patient is Non-smoker, Non-Alcoholic, Non-Diabetic. The patient was on T. Thyronorm 25 mg for Hypothyroidism since 4 years. He suffered from Guillain Barre Syndrome for 6 years from 2013 to 2019 for which he underwent allopathy treatment. He also had hypertension since 4 years and coronary artery disease(CAD) since a year, suffered a mild cardiovascular arrest before 1 month and was on the following medications Aztor 40 mg, Montrate 25 mg, Flavedon 35 mg, Ecosprin 75 mg, Clopilet 75 mg and Cardace 2.5 mg. He had a family history of systemic hypertension. The patient was attending election campaigns from where he possibly could have got infected by COVID-19. He did not take any prophylactic medicines for COVID-19.

3. Clinical findings

Siddha examination: Naadi-Kabavatham. Physical examination revealed that the patient was conscious, oriented, well built, with a height of 167 cm and weighing about 78 kg. Vital examination: Temperature-101 °F, Pulse rate-76/min, Respiratory rate-24/min, Blood pressure-130/70 mmHg and the level of Spo2 was 97% on Day 8. On general examination: Pallor, icterus, Pedal oedema and lymphadenopathy were not found. Systematic examination revealed that cardiovascular system-S1, S2 heard, no added sounds; Respiratory system -NVBS+, BAE+, no added sound was present; Central nervous system-Mental status, sensory and motor neurological functions were normal; Abdomen Examination-Soft, non-tender and no organomegaly was seen. Body temperature and the level of Spo2 were monitored daily.

4. Diagnostic assessment

RT-PCR test was positive; Laboratory findings showed a high level of CRP – 43.7 mg/L, ESR(1hr)-105mm and D-Dimer-360ng. CT chest result suggested features of viral pneumonia, CORADS -5, CT severity score-10/25, Percentage of parenchymal involvement was about 30–40% which helps to confirm COVID-19 viral infection with pneumonia. Based on the CT Chest result (severity score) and laboratory investigation, I diagnosed it as a moderate COVID 19 viral infection.

5. Therapeutic intervention

5.1. Siddha intervention

Siddha intervention was started on the 8th day of illness. Details of day-wise intervention are mentioned in [Table 1](#).

5.2. Conventional therapy

Conventional therapy was started on the 12th day due to the fall of Spo2 to 88% and the patient was admitted to the hospital. Inj.Ceftriaxone, Inj.Fandaflo2.5 Od and Inj.Decadron 8 mg, IV, Bd was given at the hospital for 3 days. On 3rd day the patient was discharged and conventional therapy was stopped. Details of Conventional therapy are mentioned in [Table 2](#).

5.3. Changes in intervention

From Day 8 to Day 11 patient was treated in OPD with Siddha medicine alone. On Day 12, when Spo2 level decreased to 88% in the early morning hours, upon his own request the patient was hospitalised and conventional therapy was started. From Day 12 to Day 14 patient was treated in hospital IPD with both Siddha and Conventional medicine. On Day 14, he was discharged from the hospital. After discharge, allopathy medicines were completely stopped and the patient took Siddha medicines alone in OPD from Day 15 to Day 23. Siddha medicines were gradually reduced and stopped completely on Day 23. After that patient was advised to take Nilavembu kudineer twice a week ([Fig. 1](#)).

6. Follow-up and outcomes

From Day 16 of illness, the patient showed a good prognosis symptomatically and the level of Spo2 gradually raised. On Day 23, the patient was completely alright with no symptoms and Spo2 level was maintained between 98 and 99%. Medicines were stopped on that day and the patient was further followed up to 3 months without medication. No adverse effect was reported by the patient during the course of treatment and the follow-up period ([Table 3](#)).

7. Discussion

COVID-19 is a highly infectious disease caused by the SARS-COV-2 which leads to fatal complications like multi-organ failure, septic shock, pulmonary oedema, severe pneumonia, and Acute Respiratory Distress Syndrome [9]. This case report discusses about the moderate COVID-19 patient with pneumonia managed through an integrative approach. The therapeutic intervention was made based on symptoms and regulating deranged humour using Siddha herbal and metallic preparations. Nilavembu kudineer has anti-viral, anti-inflammatory, hepatoprotective, anti-oxidant, immune-modulatory properties [10,11] and showed binding and blockade effects against the ACE2 receptor, the prime drug target of COVID-19 virus [12]. *Trachyspermum Ammi* is the main ingredient of oma kudineer and maantha dravagam which has antifungal, antioxidant, antimicrobial, cytotoxic activity, bronchodilating, antitussive, hypolipidaemic and antihypertensive activities [13]. *Syzygium aromaticum* in lavangadhi chooranam has analgesic, antioxidant, antiseptic, anti-inflammatory, antiviral, antifungal, and antibacterial activity [14]. Pavala parpam has antibacterial, haemostatic and anti-inflammatory activity [15,16]. The pharmacological activity may be responsible for the effect of drugs in the management of COVID-19 symptoms.

The patient showed a good prognosis and completely recovers within 16 days of treatment. Previous studies on COVID-19 showed that older patients with chronic co-morbidities such as cardiovascular disease, hypertension and pulmonary disease are more prone to critical and fatal outcomes [2,17,18]. In this case, even though the patient had multiple co-morbidities and sought treatment after the development of pneumonia, his clinical condition did not worsen. This showed that the Siddha intervention prevented the stage progression of the disease. The median time for onset of symptoms to recovery is 2 weeks for patients with mild infection and 3–6 weeks for those with serious illnesses [19]. In this case, the patient being a moderate case completely recovered within 23 days (16th day from the onset of Siddha medicines) even the patient started medicine after 7 days. So, we can assume that the duration of the disease was shortened by Siddha intervention. On Day 12, his Spo2 level dropped to 88% in

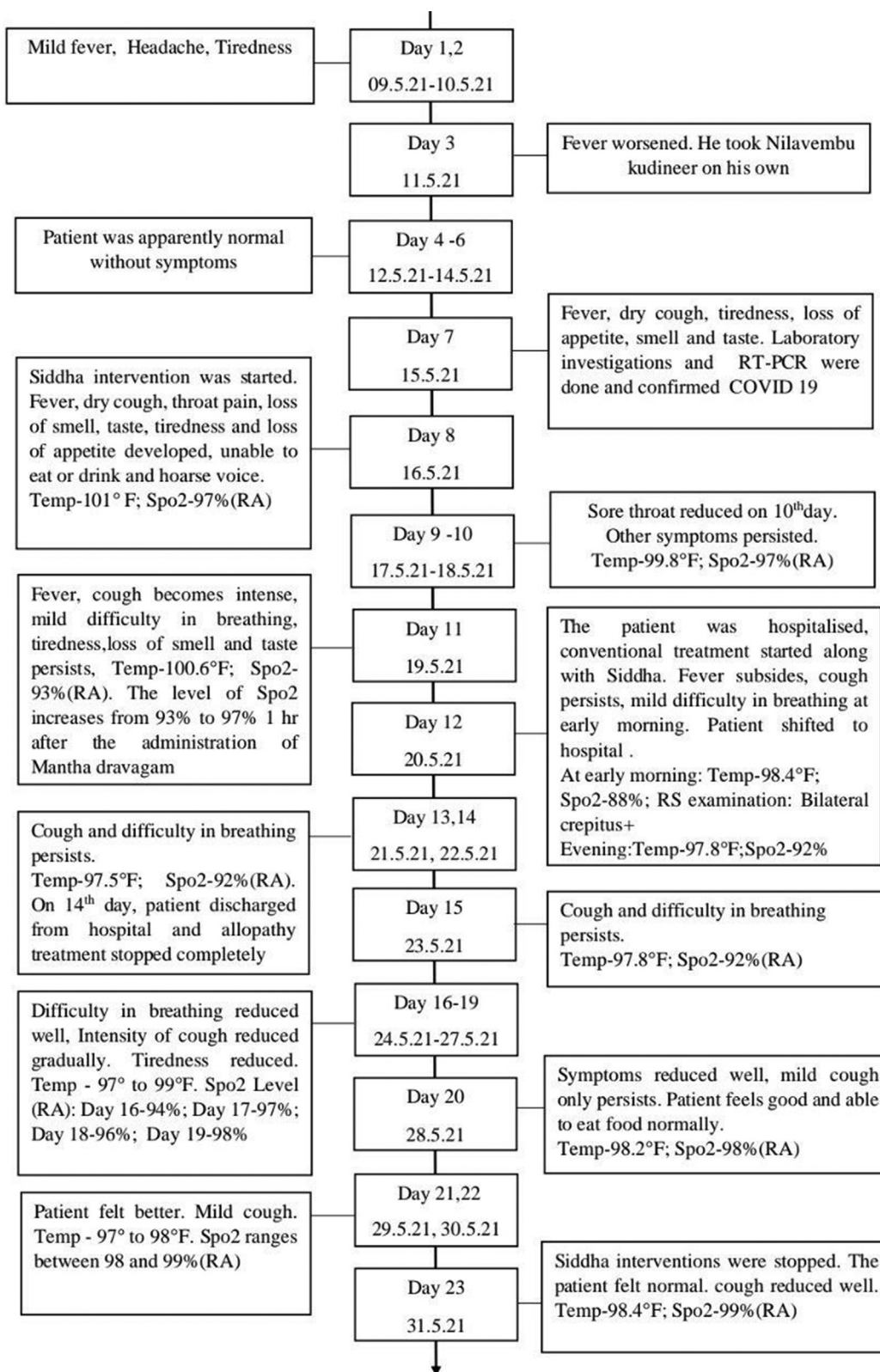


Fig. 1. Timeline illustrating the course of disease.

the early morning for which he was admitted to a hospital by his family members out of their concern. But he did not need oxygen support in the hospital and his Spo2 level was maintained above 90% in room air. Fall in Spo2 level may be due to the fact that

oxygen saturation normally reduces at night time [20]. The main strength is that the oxygen support is superfluous because the patient continued medicine throughout the course even at the hospital. Biomarkers like lymphocytopenia, thrombocytopenia,

Table 1
Details of Siddha intervention.

S.No	Name of drug	Dose	Adjuvant	Route	Duration	Indication	Procurement	Reference
1	Lavangadhi chooranam	1 gm, bd, AF	Honey	oral	8.5.21 to 27.5.21	Difficulty in breathing, Fever	GMP certified pharma (Earth India Naturals)	Chikitsaratna Deepam
2	Mahasudharsana chooranam	1 gm, bd, AF	Honey	oral	8.5.21 to 27.5.21	All types of fever, cough, difficulty in breathing	GMP certified pharma (Earth India Naturals)	Chikitsaratna Deepam
3	Pavala parpam	200 mg, bd, AF	Honey	oral	8.5.21 to 27.5.21	Fever, Tuberculosis	GMP certified pharma (MediSiddh)	The Siddha Formulary of India
4	Mahaboopathy parpam	200 mg, bd, AF	Honey	oral	8.5.21 to 27.5.21	Tuberculosis, Difficulty in breathing	GMP certified pharma (Earth India Naturals)	Chikitsaratna Deepam
5	Muthu chendhuram	100 mg, bd, AF	Honey	oral	8.5.21 to 27.5.21	Sinusitis, nasal polyp	GMP certified pharma (Earth India Naturals)	The Siddha Formulary of India
6	Nilavembu Kudineer	5 gm, bd, AF	Water	oral	8.5.21 to 30.5.21	Fever	GMP certified pharma (Earth India Naturals)	The Siddha Formulary of India
7	Oma kudineer	5 gm, bd, AF	Water	oral	8.5.21 to 30.5.21	Loss of appetite, indigestion	GMP certified pharma (Earth India Naturals)	The Siddha Formulary of India
8	T.Bramananda bairavam	2Nos (each 100 mg) bd, AF	Honey	oral	19.5.21 (1 Day)	All types of fever	GMP certified pharma (IMPCOPS)	Siddha Vaidiya Thirattu
9	Mantha dravagam	5 ml, bd, AF	Water	oral	19.5.21 to 20.5.21	Indigestion, loss of appetite	GMP certified pharma (Earth India Naturals)	Veerama munivar Nasakaandam
10	Maldevi chendhuram	100 mg, bd, AF	Ginger juice and honey	oral	20.5.21 to 22.5.21	Fever, difficulty in breathing,	GMP certified pharma (Earth India Naturals)	Chikitsaratna Deepam
11	Poorana chandrodhayam	75 mg, bd, AF	Honey	oral	23.5.21 to 27.5.21	Cough, fever, all types of pain, tuberculosis	GMP certified pharma (Earth India Naturals)	The Siddha Formulary of India

AF- after food; bd – bis in die (twice daily).

Table 2
Details of Conventional therapy.

S.No	Name of drug	Dose	Route	Duration		Uses
				From	To	
1	Inj.Ceftriaxone	2 gm, Od	IV	12.5.21	14.5.21	Antibiotic
2	Inj.Fandaflor	2.5 mg, Od	IV	12.5.21	14.5.21	Anticoagulant
3	Inj.Decadron	8 mg, bd	IV	12.5.21	14.5.21	Corticosteroid

Od – Once a day; bd – bis in die (twice daily); IV - Intravenous.

Table 3
Results of Laboratory investigation before and after treatment.

Blood Parameters	Before Treatment 7.5.21	After Treatment 23.5.21
Total WBC	10,800 cells/cu.mm	8,400 cells/cu.mm
Platelet count	2.6lakhs/cu.mm	2.55lakhs/cu.mm
Haemoglobin	12.5 gm/dl	12.5 gm/dl
Polymorphs	80%	66.2%
Lymphocytes	13%	23.7%
Total bilirubin	0.7 mg/dl	0.8 mg/dl
Direct Bilirubin	0.2 mg/dl	0.8 mg/dl
SGOT	36 IU/L	13 IU/L
SGPT	31 IU/L	27 IU/L
Alkaline phosphatase	150 IU/L	124 IU/L
Blood Urea	27 mg/dl	31 mg/dl
Serum Creatinine	0.6 mg/dl	0.9 mg/dl
CRP	43.7 mg/L	13.5 mg/dl
ESR (1Hour)	105 mm	Not tested
D-dimer	360 ng/ml	312.65 ng/ml
Ferritin	393 ng/ml	69.9 ng/ml

raised NLR ratio, CRP, ferritin and D-dimer play a vital role in diagnosis, assessing the severity and prognosis of COVID-19 [21,22]. In this case, laboratory investigations showed a reduction in CRP, WBC, NLR ratio, D-dimer and ferritin level after treatment when compared with before (See Table 3). So, Siddha intervention is effective in the management of moderate COVID-19 and associated pneumonia.

7.1. Limitations

The patient sought treatment only after the development of pneumonia (7 days from onset of the first symptom) which might have caused a mild delay in prognosis and fall of Spo2. As per the Siddha system of medicine, a proper diet regimen should be followed while taking Siddha medicines. The patient was unable to follow the diet during his stay in the hospital. From the present case study, we cannot estimate the safety parameters of an integrative medical approach like drug-to-drug interactions. CT chest was not taken at the end of treatment due to the unwillingness of the patient.

8. Conclusion

This case report shows that COVID-19 with co-morbidities can be successfully managed through Siddha integrative approach. In this case, although the patient had multiple co-morbidities and sought treatment only after the development of pneumonia, his condition did not get critical and the prognosis was faster after taking Siddha medications. This case report also provides a lead in the implementation of an integrative approach in critical conditions.

9. Patient perspective

I suffered from fever, cough, throat pain, tastelessness, tiredness, loss of appetite for 7 days. I consulted Siddha doctor, she advised me to take investigations. I was tested positive for COVID-19. She had given medicine and advice on diet. After that my health condition improved progressively. I was completely alright 13 days after taking medicines. I could see my oxygen level maintaining at 98 and 99 and it never decreased after that. My cough reduced as days went on and I have no post-COVID-19 symptoms. I thank my doctor for providing me effective treatment with the necessary guidelines day by day during my illness.

10. Informed consent

Informed consent was obtained from the patient before the onset of treatment and for publishing the details obtained from him.

CRedit author statement

B. Neethi: Conceptualization, Study design, Validation, Writing – original draft, review and editing.

P. Shanmugapriya: Conceptualization, Study design, Validation, Writing – review and editing.

G. Janaranjani: Conceptualization, Study design.

S. Gokila: Conceptualization, Study design.

B. Prathisha: Conceptualization, Study design.

J.K. Jayasree: Conceptualization, Study design

Declaration of competing interest

None.

Acknowledgment

We thank Dr.Natarajan shanmugasundaram, Research officer (Siddha), Siddha Central Research Institute for his valuable support and encouragement.

References

- [1] Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. *Acta Biomed* 2020;91(1):157–60. <https://doi.org/10.23750/abm.v91i1.9397> [PubMed] [Scopus].
- [2] Elez Kurtaj S, Greuel S, Ihlwaj J, Michaelis EG, Bischoff P, Kunze CA, et al. Causes of death and comorbidities in hospitalized patients with COVID-19. *Scientific report* 2021;11:4263. <https://doi.org/10.1038/s41598-021-82862-5> [Web of Science] [PubMed] [Scopus][Google Scholar].
- [3] Lancet T. India's COVID-19 emergency. *Lancet* 2021;397:1683. [https://doi.org/10.1016/S0140-6736\(21\)01052-7](https://doi.org/10.1016/S0140-6736(21)01052-7) [Google Scholar] [PubMed].
- [4] Anant Parasher. Covid 19 current understanding of its pathophysiology, clinical presentation and treatment. *Postgrad Med* 2021;97:312–20. <https://doi.org/10.1136/postgradmedj2020138577> [PubMed].
- [5] Huang B, Ling R, Cheng Y, Wen J, Dai Y, Huang W, et al. Characteristics of the coronavirus disease 2019 and related therapeutic options. *Mol Ther Methods Clin Dev* 2020 Jun 24;18:367e75. <https://doi.org/10.1016/j.omtm.2020.06.013> [PubMed].
- [6] Meenakumari R, Thangaraj K, Sundaram A, Sundaram MM, Shanmugapriya P, Mariappan A, et al. Clinical outcomes among COVID-19 patients managed with modern and traditional Siddha medicine - a retrospective cohort study, Chennai, Tamil Nadu, India. *J Ayurveda Integr Med* 2020. <https://doi.org/10.1016/j.jaim.2021.06.010> [PubMed].
- [7] Srivastava A, Rengaraju M, Srivastava S, Narayan V, Gupta V, Upadhyay R. A double blinded placebo controlled comparative clinical trial to evaluate the effectiveness of Siddha medicines, Kaba Sura Kudineer (KSK) & Nilavembu Kudineer (NVK) along with standard Allopathy treatment in the management of symptomatic COVID 19 patients - a structured summary of a study protocol for a randomized controlled trial. *Trials* 2021 Feb 11;22(1):130. <https://doi.org/10.1186/s13063-021-05041-x>.
- [8] Yugimuni, Thyagarajan R, editors. *Yugi Munivar Vaidhya Cinthamani (Perunool 800). Arulmiku thandayuthapani swamy thirukoil Siddha maruthuva nool veliyeettukuzhu. Chennai; 1976. p. 75.*
- [9] Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet* 2020. [https://doi.org/10.1016/S0140-6736\(20\)30211-7](https://doi.org/10.1016/S0140-6736(20)30211-7) [PubMed] [Scopus].
- [10] Anbarasu K, Manisenthil KK, Ramachandran S. Antipyretic, anti-inflammatory and analgesic properties of nilavembu kudineer choornam: a classical preparation used in the treatment of chikungunya fever. *Asian Pac J Trop Med* 2011 Oct;4(10):819–23. [https://doi.org/10.1016/S1995-7645\(11\)60201-0](https://doi.org/10.1016/S1995-7645(11)60201-0). PMID:22014740. [PubMed].
- [11] Jain Jaspreet, Kumar Ankit, Narayanan Vimal, Ramaswamy RS, Sathiyarajeswaran P, Shree Devi MS, et al. Antiviral activity of ethanolic extract of Nilavembu Kudineer against dengue and chikungunya virus through in vitro evaluation. *J Ayurveda Integr Med* 2020;11(3):329–35. <https://doi.org/10.1016/j.jaim.2018.05.006> [PubMed] [Scopus].
- [12] Alagu Lakshmi S, Shafreen RMB, Priya A, Shunmugiah KP. Ethnomedicines of Indian origin for combating COVID-19 infection by hampering the viral replication: using structure-based drug discovery approach. *J Biomol Struct Dyn* 2021;39(13):4594–609. <https://doi.org/10.1080/07391102.2020.1778537> [Scopus].
- [13] Bairwa R, Sodha RS, Rajawat BS. Trachyspermum ammi. *Pharm Rev* 2012;6(11):56–60. <https://doi.org/10.4103/0973-7847.95871> [Scopus].
- [14] Batiha GE, Alkazmi LM, Wasef LG, Beshbishy AM, Nadwa EH, Rashwan EK. *Syzygium aromaticum* L. (Myrtaceae): traditional uses, bioactive chemical constituents, pharmacological and toxicological activities. *Biomolecules* 2020;10(2):202. <https://doi.org/10.3390/biom10020202> [PubMed].
- [15] Thanigavelan V, Victor rajamanickam G, Kaliyampurthi V, Lakshmanakumar V, Sasikala N, Thirunavukkarasu SV. Antibacterial and haemostatic activities of a Siddha formulation – pavalarparpam. *Pharmacologyonline* 2011;1:613–24 [Scopus] [Google Scholar].
- [16] Nisha J, Muthu Kumar NJ, Anbu N, Banumathi V. In-vitro evaluation of anti-inflammatory potential of novel Siddha formulation pavazha parpam by albumin protein denaturation assay. *World J Pharm Pharmaceut Sci* 2019;8(issue 1) [Scopus] [Google Scholar].
- [17] Wang Y, Wang Y, Chen Y, Qin Q. Unique epidemiological and clinical features of the emerging 2019 novel coronavirus pneumonia (COVID-19) implicate special control measures. *J Med Virol* 2020 Jun;92(6):568–76. <https://doi.org/10.1002/jmv.25748>. Epub 2020 Mar 29. PMID: 32134116 [PubMed] [Scopus].
- [18] Pranata R, Lim MA, Huang I, Raharjo SB, Lukito AA. Hypertension is associated with increased mortality and severity of disease in COVID-19 pneumonia: a systematic review, meta-analysis and meta-regression. *J Renin Angiotensin Aldosterone Syst* 2020;21:2. <https://doi.org/10.1177/1470320320926899> [Scopus] [Web of Science].
- [19] Tolossa T, Wakuma B, Seyoum Gebre D, Merdassa Atomssa E, Getachew M, Fentosa G, et al. Time to recovery from COVID-19 and its predictors among patients admitted to treatment center of Wollega University Referral Hospital (WURH), Western Ethiopia: survival analysis of retrospective cohort study. *PLoS One* 2021;16(6):e0252389. <https://doi.org/10.1371/journal.pone.0252389> [PubMed] [Google Scholar] [Scopus] [Web of Science].
- [20] Ali K, Cheek E, Sills S, Crome P, Roffe C. Day-night differences in oxygen saturation and the frequency of desaturations in the first 24 hours in patients with acute stroke. *J Stroke Cerebrovasc Dis* 2007 Nov-Dec;16(6):239–44. <https://doi.org/10.1016/j.jstrokecerebrovasdis.2007.07.004>. PMID: 18035240. [PubMed].
- [21] Samprathi M, Jayashree M. Biomarkers in COVID-19: an up-to-date review. *Front. Pediatr.* 2021;8:607647. <https://doi.org/10.3389/fped.2020.607647> [PubMed] [Google Scholar].
- [22] Terpos E, Ntanasis-Stathopoulos I, Elalamy I, Kastiris E, Sergentanis TN, Politou M, et al. Hematological findings and complications of COVID-19. *Am J Hematol* 2020;95:834–47. <https://doi.org/10.1002/ajh.25829> [PubMed] [Scopus].