

Exploring Alternative Medicine Options for the Prevention or Treatment of Coronavirus Disease 2019 (Covid-19): A Systematic Scoping Review

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ABSTRACT

Background: Coronavirus disease 2019 (COVID-19) is caused by coronavirus 2 (SARS-CoV-2). Symptoms include fever, cough, and shortness of breath, muscle pain, pneumonia, and multi-organ failure. The infection spreads from one person to another *via* respiratory droplets. Alternative Medicine (AMs) *viz.*, Ayurveda, Homeopathy, Unani, and Traditional Chinese Medicine (TCM), are being promoted for the prevention of COVID-19. The aim of this systematic scoping review was to identify and summarize the scientific evidences promoting the use of AMs for the prevention of COVID-19.

Methods: A comprehensive search of electronic search engines (PubMed and Web of Science) was performed. In addition, freewheeling searches of the government health ministries and government websites was done to retrieve the available information. Records available until 12th March 2020 were considered. Reports proposing the use of AMs for prevention or treatment of COVID-19 across all countries were included. Screening (primary and secondary) of the records and data extraction from the eligible studies were done by a single reviewer followed by a random quality check (10%) by the second reviewer.

Results: Overall, 8 records (7 from China and 1 from India) exploring the use of AMs for the prevention or treatment of COVID-19 were identified.

Different medicines were explored by different AM systems.

Conclusion: Several AMs options are proposed for the prevention or treatment of COVID-19. However, their efficacy and safety still needs scientific validation through rigorous randomized controlled trials. This review may help inform decisions about the importance of research and development of AMs for COVID-19 prevention and treatment.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is spreading rapidly throughout the world and is infecting people irrespective of their age, sex and ethnicity. The healthcare systems of several countries are already stretched to their limits. The disease spreads *via* the respiratory droplets and close contact, and the disinfection of cities and communities is not showing to be effective for the control of the disease [1]. The World Health Organization (WHO) has declared COVID-19 as a global pandemic which is causing critical challenges for the politicians, public health practitioners, scientists, and the medical community to deal with the situation [2,3]. There is no specific antiviral treatment available in the modern medicine system to treat COVID-19. Despite concerted efforts, a truly effective vaccine is still not available. Under such conditions, it is imperative that resource-starved nations and communities may think for relatively cheaper options of Alternative Medicines (AMs) for prophylaxis or treat themselves against this virus. Presently, it is a worldwide emergency and the primary objective of mankind at this moment is to survive. The scientific basis of the AM treatment options can be explored and debated later. Mankind cannot allow thousands or millions to perish before modern medicine invents a cure or prophylaxis. In China itself, the total number of confirmed cases treated by Traditional Chinese Medicine (TCM) has reached 60,107 [4]. Indian government ministry of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH) is also proposing Homeopathy and Ayurveda for prophylaxis and Unani medicines for symptomatic management of COVID-19 [5].

There are two broad clinical systems for preventing or treating the disease:

- i) Modern medicine, which is experimental medicine based on modern scientific clinical evidence.
- ii) Alternative medicine, which comprises :

(a) Ayurveda: This system uses plant-based medicines with some animal products as well as added minerals; the evidence is largely clinical.

(b) Homeopathy uses an extremely diluted form of numerous substances. Evidence is largely clinical and partly from Randomized Controlled Trials (RCTs).

(c) Unani is a Perso-Arabic system of medicine based originally on the teachings of the Greek physicians Hippocrates and Galen.

(d) TCM: Based on traditional practices and beliefs from China which mostly include herbal formulations besides acupuncture, cupping therapy, gua sha, massage (tui na), bonesetter (die-da), exercise (qigong), and dietary therapy. Recently, articles exploring the use of AMs for COVID-19 prevention or treatment are available in the electronic search engines such as PubMed, Web of Science, etc. This systematic scoping review aims to summarize

available evidences on the AM options for the prevention or treatment of COVID-19. Specifically, we aimed to answer the following questions:

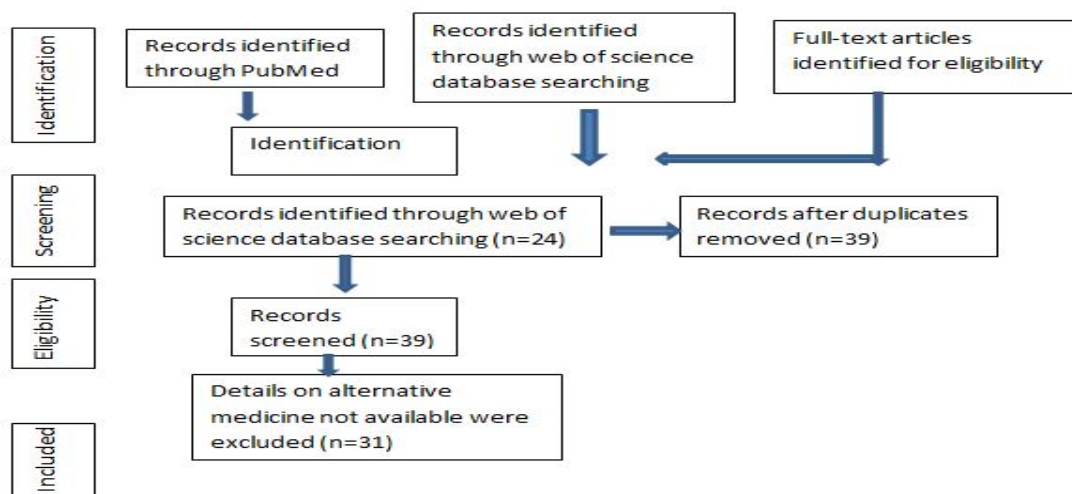
1. Is there any recent evidence available for using AMs for the prevention or treatment of COVID-19; if yes then how they are distributed country-wise?
2. Is there any scientific research-based evidence available for the proposed AMs for COVID-19 prevention or treatment?

MATERIALS AND METHODS

Search criteria

Experimental details: A comprehensive literature search was performed following PRISMA guidelines [6,7] to screen the records on AMs for COVID-19 (Figure 1) using the phrase (Ayurveda or traditional Chinese medicine or homeopathy or Unani or siddha) and (COVID-19). Briefly, electronic search engines (PubMed and Web of Science) were screened from the inception database to 12th of March 2020. In addition, freewheeling searches of the health ministry and government websites of different countries was done to retrieve all the relevant data. The records issued by the government authorities reflect its acceptance among the society in that country and hence included. One reviewer (A.N.) screened all titles and abstracts and relevant full-text articles. A second researcher (V.S.) performed a quality check of a random selection of 10% of titles, abstracts, and full-text articles. Discrepancies were resolved; when a consensus was not reached, a third researcher was consulted. Relevant data from all included studies were extracted by a single reviewer, using a pre-defined extraction grid, which was subsequently validated by an independent reviewer. The detailed criteria of screening are mentioned.

Figure 1: Flow chart describing the included/excluded literature.



The inclusion and exclusion criteria are:

Inclusion criteria: (i) Records where details of AMs (Ayurveda, Homeopathy, Unani, and TCM) on COVID-19 were given, are included for quantitative analysis.

(ii) Records whose abstract and full text available was included.

(iii) Records published in English were included.

Exclusion criteria: (i) Records where details on AMs were not available was excluded.

Data extraction: From the selected records following was extracted (i) Type of AMs system i.e. Ayurveda, Homeopathy, Unani and TCM (ii) country (iii) clinical treatment (iv) Drug dosage recommended (v) Drug duration recommended.

Results: A total of 8 records [4,5,8-13] were obtained where the promotion of AMs (Ayurveda, Homeopathy, Unani, and TCM) for the prevention or treatment of COVID-19 were described. Seven records were on TCM and one record covered Ayurveda, Homeopathy, and Unani medicines. Records were either from China (n=7) or India (n=1). Different AMs comprising preventive management and symptomatic management were proposed for the treatment of COVID-19. Diverse drug dose and duration were suggested for specific types of AMs (Table 1). During our search we found only the names of the Ayurveda, Homeopathic, and Unani Medicines in the record. In order to understand the probable connection of these medicines with COVID-19, we further explored the general properties of promoted AMs whose details are:

Ayurveda

Ark Ocimum sanctum (tulsi extract): It is said to prevent disease, promote general health, wellbeing and longevity. In addition to providing immunity, it is recommended as a treatment for a range of conditions including anxiety, fever, cough, asthma, diarrhea, vomiting, indigestion, dysentery, diabetes, arthritis, genitourinary disorders, and back pain [14-16].

Amritarishta: The main ingredient of Amritarishta is *Tinospora Cordifolia* and *Dashmool* with water. Dashmoolmatrabastiin has shown efficacy in the management of benign prostatic hyperplasia [17].

Agastya Harityaki: It contains Haritaki as one of the main components. The plant has been extensively used for cough, intermittent fevers, indigestion, anemia, asthma, neuropathy, etc. Haritaki has been well reported for its antiviral properties [18].

SamshamaniVati: It is an ayurvedic medicine used in the treatment of all types of fever. It is prepared with Giloya (*Tinospora cordifolia*) [19]. Giloya extract contains many constituents such as alkaloids, steroids, glycosides, and polysaccharides [20]. Its extract is extensively used in various herbal preparations for the treatment of different ailments for its immunomodulatory, anti-inflammatory, anti-oxidant, anti-spasmodic, anti-osteoporotic, anti-arthritic, and anti-allergic properties [21,22].

Trikatu (Pippali, Marich and Shunthi) powder and Tulsi leaves: It is an herbal formulation containing dried fruits of *Piper nigrum* (Maricha) and *Piper longum* (Peepli), and dried rhizomes of *Zingiber officinale* (Sunthi) mixed together in equal quantities. Different extracts and fractions of Trikatu possess anti-oxidant [23], immunomodulatory [24,25], anti-allergic [26] and anti-arthritic [27] activities. Studies report that Trikatu possesses the ability to improve the

bioavailability of various drugs if combined with them thereby increasing the efficacy of the treatment. It is also prescribed for the treatment of asthma, cough, chronic rhinitis/sinusitis etc [28,29].

Ashwagandha (*Withania somnifera*): It is also called 'Indian Ginseng', is an important medicinal plant widely used against many diseases in Indian Systems of Medicine. It is shown to possess anti-microbial, anti-inflammatory, anti-tumor, anti-stress, neuroprotective, cardioprotective, and anti-diabetic properties [30-32]. It has shown antiviral activity against infectious bursal disease virus and herpes simplex virus type 1 [33,34].

Homeopathy

***Arsenicum album* 30C:** *Arsenicum album* 30C and two drops of sesame oil in each nostril each morning are suggested by the advisory given by Central Council for Research in Homeopathy (CCRH), India for prevention to COVID-19 [5]. *Arsenicum album* 30C is prepared by diluting aqueous arsenic trioxide until little or no arsenic remains, and is used in respiratory disorders. Mice intoxicated with arsenic trioxide injections when treated with *Arsenicum album* 30 showed revival and restoration of protein and DNA damage of liver and kidney [35]. Some improvement in the clinical outcome of Acute Encephalitis Syndrome was observed with adjunctive Homeopathic medicines which included *Arsenicum album* 30 [36].

Unani

***Sharbat Unnab*:** It is widely used in the Unani system of medicine as a blood purifier, curing sore throat, catarrh, cough, urticaria, chest pain and pneumonia [37,38].

***Khamira Marwareed*:** It exhibits immune-stimulatory activity leading to a Th1-dominant immune state [39]. Although considered to be cardio-protective no scientific evidence is reported yet [40].

***Roghan Baboona*:** It exhibits anti-inflammatory and analgesic activities. Massage with *Roghan Baboona* is reported to give relief from symptoms and signs of osteoarthritis and rheumatoid arthritis in patients [41].

***Arque-Ajeeb*:** It is a Unani formulation consisting of plant extracts of *Mentha arvensis* Linn, seeds extract of *Trachyspermum ammi* Linn and Camphor. It is reputed for its beneficial effects in the treatment of diarrhea and cholera [42], but the claim of the efficacy is yet to be tested.

***Habb-e-Ikseer Bukhar*:** It is suggested as an antipyretic to lower the body temperature for clinical management of Dengue fever [43].

***Behidana*:** The entire plant is used for medicinal purposes, and it has been proven as anti-oxidant, anti-bacterial, anti-inflammatory, anti-allergic, aphrodisiac, nephroprotective, anti-atherosclerotic, anti-hypertensive, hypolipidaemic, hepatoprotective, anti-spasmodic, and anti-cancerous [44].

***Sapistan*:** It exhibits significant anti-bacterial activity and is used to treat upper respiratory tract infections [45].

Darchini: It is also called Cinnamon, is a coagulant and prevents bleeding [46]. It also possesses anti-microbial [47], anti-fungal [48], and anti-oxidant [49] properties. Its use might be beneficial to reduce oxidative stress-induced complications and oxidative stress associated diseases [50,51].

Banafsha: It exhibits anti-inflammatory, anti-microbial, anti-oxidant, anti-pyretic, expectorant and anti-tussive, anti-spasm and bronchodilator, analgesic activities [52]. *Sharbat banafsha* also effectively relieves most of the complaints due to chronic sinusitis [53].

Chiraita: Previous research demonstrates that the *Swertia chirayita* extracts exhibit a wide range of biological activities, such as anti-bacterial, anti-fungal, anti-viral, anti-inflammatory, and anti-diabetic and antioxidant [54-56].

Kasni: The root extract of Kasni (*Cichoriumintybus*) is shown to have anti-tumor and immuno-modulatory properties [57]. Dried root is used as a tonic in fevers, rheumatic complaints vomiting, diarrhea, and enlarged spleen [58].

Afsanteen: It exhibits diverse pharmacological effects such as anti-helminthic, anti-bacterial, anti-pyretic and hepatoprotective [59].

Neem bark: Its ingredients are used for the treatment of many cancers, infectious and metabolic diseases in traditional medicine [60].

SaadKoofi: SaadKoofi (*Cyperusrotundus*) is a medicinal plant having potential pharmacological actions both prophylactic and therapeutic [61].

GuleSurkh (Rosa damascene flower): It is medicinally used in various diseases such as asthma, bronchitis, wounds, and ulcer [62]. The mixture made by rose and honey is very effective in throat problems.

Traditional Chinese medicine: Mostly combinations of TCMs were proposed for the prevention or treatment of COVID-19 which are already covered by several articles [4,5,8-10,12]. Since the therapeutic activity was not of an individual medicine but of cocktail they are not described here. However, early intervention of TCMs showed to be effective in improving cure rate of COVID-19 patients. It delayed the disease progression, shortened the course of the disease and reduced mortality in the treated patients [4]. Based on the effective response of TCM on COVID-19 patients, TCM treatment strategies have been included in guidelines issued from China [11,13]. Further details of TCMs used for the treatment of COVID-19 are described in Table 1.

Table 1: Describes the promotions country-wise, clinical treatment, medicines, drug dose and duration of the alternative therapy systems for COVID-19.

Alternative therapy system	Country	Clinical treatment	Medicines	Drug dose	Duration	References
Ayurveda	India	preventive management	<i>Ark Ocimum sanctum</i> (tulsi)	drink morning 20 ml and evening 20	15-20 days	5,8

			ark)	ml with 20 ml of water		
	India	preventive management	<i>Amritarishta</i>	drink afternoon 30 ml and night 30 ml with 20 ml of water after meals	15-20 days	5
	India	preventive management	<i>Agastya Harityaki</i>	consume 5 gm of Agastya Harityaki with warm water	twice a day	5
	India	preventive management	<i>Samshamani Vati</i>	consume 500 mg of <i>Samshamani Vati</i>	twice a day	5
	India	preventive management	Trikatu (<i>Pippali, Marich</i> and <i>Shunthi</i>) powder and Tulsi leaves	consume 5 gm of Trikatu (<i>Pippali, Marich</i> and <i>Shunthi</i>) powder and 3 to 5 Tulsi leaves boiled in water	as and when required	5
	India	preventive management	Anutaila/Sesame oil	<i>Pratimarsa Nasya</i> : instil two drops of Anutaila/Sesame oil in each nostril	daily in the morning	5
	India	preventive management	Ashwagandha	-	-	8
Homeopathy	India	preventive management	<i>Arsenicum album</i> 30	-	one dose daily in empty stomach for three days. The dose should be repeated after one month by following the same schedule in case Coronavirus infections prevail in the community	5
Unani	India	symptomatic management	Sharbat Unnab	10-20 ml	twice daily	5
	India	symptomatic management	TiryAQ Arba	3-5 gm	twice daily	5
	India	symptomatic management	TiryAQ Nazla	5 gm	twice daily	5
	India	symptomatic management	Khamira Marwareed	3-5 gm	once a day	5
	India	symptomatic management	Roghan Baboona or Roghan Mom	massage scalp and chest	-	5

			or Kafoori Balm			
	India	symptomatic management	Roghan Banafsha	apply in the nostrils	-	5
	India	symptomatic management	Arq Ajeeb	4-8 drops of Arq Ajeeb in fresh water	four times daily	5
	India	symptomatic management	Habb-e-Ikseer Bukhar	In case of fever, 2 pills of Habb-e-Ikseer Bukhar with lukewarm water	twice daily	5
	India	symptomatic management	Sharbat Nazla	10 ml of <i>Sharbat Nazla</i> mixed in lukewarm water	twice daily	5
	India	symptomatic management	Qurs-e-Suaal	Chew 2 tablets	twice daily	5
	India	preventive	Behidana	Prepare decoction of 3 gm Behidana	-	5
	India	preventive	Unnab	Prepare decoction of 7 nos Unnab	-	5
	India	preventive	Sapistan	Prepare decoction of 7 nos Sapistan	-	5
	India	preventive	Darchini	Prepare decoction of 3 gm Darchini	-	5
	India	preventive	Banafsha	Prepare decoction of 5 gm Banafsha	-	5
	India	preventive	Berg-e-Gaozabaan	Prepare decoction of 7 gm Berg-e-Gaozabaan	-	5
	India	preventive	Chiraita and SharbatKhaksi	Arq extracted from Chiraita along with SharbatKhaksi	-	5
	India	preventive	Kasni and SharbatKhaksi	Arq extracted from Kasni along with SharbatKhaksi	-	5
	India	preventive	Afsanteen and SharbatKhaksi	Arq extracted from Afsanteen along with SharbatKhaksi	-	5
	India	preventive	Nankhawa and SharbatKhaksi	Arq extracted from Nankhawa along with SharbatKhaksi	-	5
	India	preventive	Gaozaban and SharbatKhaksi	Arq extracted from Gaozaban along with SharbatKhaksi	-	5
	India	preventive	Neem Bark and SharbatKhaksi	Arq extracted from Neem Bark along with	-	5

				SharbatKhaksi		
	India	preventive	SaadKoofi and SharbatKhaksi	Arq extracted from SaadKoofi along with SharbatKhaksi	-	5
	India	sore throat	Khashkhash	Prepare decoction of Khashkhash	-	5
	India	sore throat	Bazrulbanj	Prepare decoction of Bazrulbanj	-	5
	India	sore throat	Post Khashkhash	Prepare decoction of Post Khashkhash	-	5
	India	sore throat	Barg e Moard (Habbulaas)	Prepare decoction of Barg e Moard	-	5
	India	sore throat	Tukhm e kahuMukashar	Prepare decoction of Tukhm e kahuMukashar	-	5
	India	sore throat	GuleSurkh	Prepare decoction of GuleSurkh	-	5
Traditional Chinese Medicine (TCM)	China	-	<i>Gingfei paidu</i> decoction	-	-	4,9
	China	-	<i>Gancaoganjiang</i> decoction	-	-	4,9
	China	-	<i>Sheganmahuang</i> decoction	-	-	4,9
	China	-	<i>Gingfei touxie fuzheng recip</i>	-	-	4,9
	China	-	QPD which consist of <i>Ephedrae Herba, Glycyrrhizae Radix et Rhizoma Praeprata cum Melle, Armeniacae Semen Amarum, Gypsum Fibrosum, Cinnamomi Ramulus, Alismatis Rhizoma, Polyporus, Atractylodis Macrocephalae Rhizoma, Poria, Bupleuri Radix, Scutellariae Radix, Pinelliae Rhizoma Praepratatum cum Zingibere et Alumine, Zingiberis</i>	-	-	4,9

			<i>Rhizoma Recens, Asteris Radix et Rhizoma, Farfae Flos, Belamcandae Rhizoma, Asari Radix et Rhizoma, Dioscoreae Rhizoma, Aurantii Fructus Immaturus, Citri Reticulatae Pericarpium, and Pogostemonis Herba</i>			
China	-		ShuFengJieDu	-	-	10
China	-		Lianhuaqingwen	-	-	10
China	asymptomatic infection		Modified <i>Yupingfeng</i> powder in combination with <i>Buhuanjin</i> <i>Zhengqi</i> powder	9-12 g of <i>Zhihuangqi</i> (Prepared Astragalus), 6-9 g of <i>Chaobaizhu</i> (Roasted <i>Rhizoma Atractylodis Macrocephalae</i>), 3-9 g of <i>Houpo</i> (Officinal Magnolia Bark), 6-9 g of <i>Cangzhu</i> (<i>Atractylodes lancea</i>), 6-9 g of <i>Chenpi</i> (<i>Pericarpium citri reticulatae</i>), 3-6 g of <i>Jiangbanxia</i> (Ginger processed pinellia), 6-9 g of <i>Huoxiang</i> (<i>Agastache rugosus</i>), 6 to 9 g of <i>Fuling</i> (<i>Poria cocos</i>), and 3-6 g of <i>Zhigancao</i> (Prepared Licorice Root)	-	11
China	for old and damp tightening the lung		Modified <i>Qingqi</i> decoction	6-9 g of <i>Cangzhu</i> , 3-9 g of <i>Houpo</i> , 6-9 g of <i>Chenpi</i> , 6-12 g of <i>Huoxiang</i> , 3-9 g of <i>Banxia</i> , 3-9 g of <i>Xingren</i> , 9-15 g of <i>Suye</i> , 6-9 g of <i>Jiegeng</i> , 6-9 g of <i>Guanzhong</i> , 6-9 g of <i>Fuling</i> , 3-6 g of <i>Shengjiang</i> , and		11

				3–6 g of <i>Gancao</i>		
China	plague poison obstructing lungs	<i>Xuanbai Chengqi</i> decoction		6–9 g of <i>Huoxiang</i> , 10 g of <i>Cangzhu</i> , 3–6 g of <i>Zhimahuang</i> , 3–9 g of <i>Chaoxingren</i> , 15–30 g of <i>Shengshigao</i> , 10 g of <i>Gualou</i> , 3–6 g of <i>Jiujun</i> (to be added later in preparation), 6–9 g of <i>Huangqin</i> , 6–9 g of <i>Fuling</i> , 6–9 g of <i>Danpi</i> , 6–9 g of <i>Shichangpu</i> , and 3–6 g of <i>Chuanbei</i>		11
China	inner blocking causing unconsciousness and collapse	Shenfu decoction, Shengmai drink and Angong Niu Huang Pill		Shenfu decoction plus Shengmai drink composed of 3–6 g of <i>Renshen</i> (radix ginseng), 6–12 g of <i>fuzi</i> (radix aconiti Praepareta) (to be decocted one hour first). 6–12 g of <i>Shanzhuyu</i> (Fructus Corni), 10 g of <i>Maimendong</i> (Radix ophiopogonis), and 3–6 g of <i>Rougui</i> (Cinnamomum cassia), to be taken with with Angong Niu Huang Pill		11
China	Qi deficiency of both the lung and spleen	modified LiuJunZi decoction		15 g of <i>Zhihuangqi</i> (Prepared Astragalus), 10 g of <i>Xiyangshen</i> (American Ginseng), 10 g of <i>Chaobaizhu</i> (Roasted <i>Rhizoma Atractylodis Macrocephalae</i>), 6 g of <i>Fabanxia</i> (<i>Rhizoma Pinelliae preparatum</i>), 6 g of <i>Chenpi</i> (<i>Pericarpium citri reticulatae</i>), 3 g of <i>Chuanbei</i> (Tendrilled fritillary bulb), 15 g of <i>Fuling</i> (<i>Poria</i>		11

				cocos), 6 g of <i>Huoxiang</i> (<i>Agastache rugosus</i>), and 3 g of Sharen (<i>Fructus amomi</i>) (to be added in later)		
	China	preventive	<i>Radix astragali</i> (Huangqi), <i>Radix glycyrrhizae</i> (Gancao), <i>Radix saposchnikoviae</i> (Fangfeng), <i>Rhizoma Atractylodis Macrocephalae</i> (Baizhu), <i>Lonicerae Japonicae</i> Flos (Jinyinhua), and <i>Fructus forsythia</i> (Lianqiao) mostly contained in Yupingfeng Powder	-	-	12
	China	preventive	<i>Astragalus mongholicus</i> , <i>rhizoma atractylodis macrocephalae</i> , <i>saposchnikovia divaricata</i> , <i>Cyrtomium fortunei</i> , honeysuckle, tangerine or orange peel, eupatorium, and licorice.	<i>Astragalus mongholicus</i> 12 g, roasted <i>rhizoma atractylodis macrocephalae</i> 10 g, <i>saposchnikovia divaricata</i> 10 g, <i>Cyrtomium fortunei</i> 10 g, honeysuckle 10 g, dried tangerine or orange peel 6 g, eupatorium 10 g, and licorice 10 g. Taking the medicine above yielded decoction once a day for adults, and for 5 days as a treatment course. If for children, cutting the dose to half		13
	China	preventive	Medical tea: perilla leaf, agastache leaf, dried tangerine or orange peel, amomum tsao-ko, and ginger.	Medical tea: perilla leaf 6 g, agastache leaf 6 g, dried tangerine or orange peel 9 g, stewed <i>amomum tsao-ko</i> 6 g, and 3 slices of ginger. Soak the herbs in hot water and		13

				drink the water.		
	China	preventive	<i>Huoxiang Zhengqi</i> capsule or <i>Huoxiang Zhengqi Shui</i>	<i>Huoxiang Zhengqi</i> capsule or <i>Huoxiang Zhengqi Shui</i> (in half dose).		13
	China	hypodynamia accompanied by gastrointestinal upset	<i>Huoxiang Zhengqi</i> capsules (ball, liquid, or oral liquid).			13
	China	hypodynamia and fever	<i>Jinhua Qinggan</i> granules, <i>Lianhua Qingwen</i> capsules (granules), <i>Shufeng Jiedu</i> capsules (granules), or <i>Fangfeng Tongsheng</i> pills (granules).			13
	China	Clinical treatment period Early-stage, characterized as exterior syndrome of cold-dampness. aversion to cold without sweating, headache and generalized heaviness, limb pain, glomus and fullness in the chest and diaphragm, thirst with no desire to drink, ungratifying loose stool, yellow urine, frequent micturition and yellow urine	<i>Huoxiang Zhengqi</i> powder Decoction and/or <i>Huoxiang Zhengqi</i> capsules or <i>Huoxiang Zhengqi Shui</i> .			13
	China	early-stage, characterized as cold-dampness obstructing lung. The clinical manifestation presents as aversion to cold with or without	<i>atractylodes lancea</i> , tangerine or orange peel, <i>mangnolia officinalis</i> , <i>agastache rugosus</i> , <i>amomum tsao-ko</i> , <i>ephedra herb</i> , <i>notopterygium</i>	<i>atractylodes lancea</i> 15 g, dried tangerine or orange peel 10 g, <i>mangnolia officinalis</i> 10 g, <i>agastache rugosus</i> 10 g (end addition), <i>amomum tsao-ko</i> 6 g, <i>ephedra herb</i>		13

		fever, dry cough, dry throat, fatigue and hypodynamia, oppression in chest, epigastric fullness, or nausea, loose stool. The tongue is pale or reddish, the tongue fur is slimy white, and soggy pulse	root, ginger, areca-nut, <i>periostracum cicada</i> , <i>bombyx batryticatus</i> , and <i>rhizoma curcumae longae</i>	6 g, <i>notopterygium</i> root 10 g, ginger 10 g, areca-nut 10 g (end addition), <i>periostracum cicada</i> 10 g, <i>bombyx batryticatus</i> 10 g, and <i>rhizoma curcumae longae</i> 10 g above yielded decoction	
	China	middle-stage, characterized as epidemic toxin blocking the lung. In this stage, its clinical manifestation includes persistent fever or alternating cold and heat, cough with less phlegm, or yellow phlegm, abdominal distension and constipation; oppression in chest with anhelation, cough with wheezes, panting on exertion; or red tongue, slimy yellow fur or yellow dry fur, slippery and rapid pulse	almond, gypsum, <i>trichosanthes kirilowii</i> , <i>rhubarb</i> , <i>ephedra</i> with honey fried, <i>semen lepidii</i> , peach kernel, <i>amomum tsao-ko</i> , <i>arecanut</i> and <i>atractylodes lancea</i> , Xiyanping injection or Xuebijing injection	almond 10 g, gypsum 30 g (predecoction), <i>trichosanthes kirilowii</i> 30 g, <i>rhubarb</i> 6 g (end addition), <i>ephedra</i> with honey fried 6 g, <i>semen lepidii</i> 10 g, peach kernel 10 g, <i>amomum tsao-ko</i> 6 g, <i>arecanut</i> 10 g, and <i>atractylodes lancea</i> 10 g above yielded decoction. In addition, the recommended Chinese patent medicine is Xiyanping injection or Xuebijing injection	13
	China	severe stage, characterized as heat toxin generating stasis. In this stage, the clinical manifestations is known as high fever, oppression in chest with anhelation,	three Yellows and Gypsum, Shang Jiang Powder, and Toxin-Resolving Blood-quickening decoction comprising of <i>ephedra</i> with honey fried, almond, gypsum, <i>periostracum cicada</i> , <i>bombyx</i>	three Yellows and Gypsum decoction, Shang Jiang Powder, and Toxin-Resolving Blood-quickening decoction. Its composition comprises of <i>ephedra</i> with honey fried 10 g, almond, 10 g, gypsum 20-30 g,	13

		purple-black facial complexion, lips dark and swollen, obnubilation, crimson tongue, yellow dry fur, surging and fine rapid string like pulse	<i>batryticatus</i> , <i>rhizoma curcumae longae</i> , rhubarb stir-fried with wine, <i>scutellaria baicalensis</i> , <i>coptis chinensis</i> , <i>phillyrin</i> , <i>angelica sinensis</i> , peach kernel, <i>radix paeoniae rubra</i> , and rhizome of rehmannia, Xiyanping injection, Xuebijing injection, Qingkailing injection, or Angong Niuhuang pills	<i>periostracum cicada</i> 10 g, <i>bombyx batryticatus</i> 10 g, <i>rhizoma curcumae longae</i> 10 g, rhubarb stir-fried with wine 10 g, <i>scutellaria baicalensis</i> 10 g, <i>coptis chinensis</i> 5 g, <i>phillyrin</i> 15 g, <i>angelica sinensis</i> 10 g, peach kernel 10 g, <i>radix paeoniae rubra</i> 15 g, and rhizome of rehmannia 15 g above yielded decoction. The recommended Chinese patent medicines is the Xiyanping injection, Xuebijing injection, Qingkailing injection, or Angong Niuhuang pills	
	China	severe-stage, characterized as inner blocking causing collapse. In this stage, the clinical manifestation include dyspnea, panting on exertion or need assisted ventilation, accompanied by coma, and agitation, cold limbs with cold sweating, dark purple tongue, thick or dry thick tongue fur, floating and rootless pulse	<i>ginseng</i> , <i>aconitine</i> , and <i>Cornus officinalis</i> , Suhexiang pills or Angong Niuhuang pills, Xuebijing injection, Shenfu injection, or Shengmai injection	<i>ginseng</i> 15 g, <i>aconitine</i> 10 g (predecoction), and <i>Cornus officinalis</i> 15 g above yielded decoction, and both taken with fluid Suhexiang pills or Angong Niuhuang pills. The recommended Chinese patent medicines is Xuebijing injection, Shenfu injection, or Shengma injection	13
	China	recovery-stage, presents as lung and spleen Qi	Rhizome <i>pinellinae praeparata</i> , dried tangerine or	<i>Rhizome pinellinae praeparata</i> 9 g, dried tangerine or orange peel 10 g,	13

		deficiency. Its clinical manifestations include shortness of breath, fatigue and hypodynamia, anorexia, nausea and vomiting, glomus and fullness, weak stools, ungratifying loose stool, pale tender-soft enlarged tongue, slimy white tongue fur	orange peel, <i>Codonopsis pilosula</i> , radix <i>astragali preparata</i> , <i>poria cocos</i> , <i>agastache rugosus</i> , and <i>fructus amomi</i> , <i>costus</i> pill and amomum with six noble ingredients	<i>Codonopsis pilosula</i> 15 g, <i>radix astragali preparata</i> 30 g, <i>poria cocos</i> 15 g, <i>agastache rugosus</i> 10 g, and <i>fructus amomi</i> 6 g (end addition) above yielded decoction. In addition, the recommended Chinese patent medicines is pill of <i>costus</i> and amomum with six noble ingredients	
	China	recovery-stage, characterized as deficiency of Qi and Yin. The clinical manifestations of this stage is generalized heat with sweating, chest heat vexation, Qi counterflow with retching and vomiting, shortness of breath and lassitude of essence-spirit, red tongue and thin tongue fur, vacuous pulse	<i>Zhuye Shigao</i> , <i>cogongrass</i> rhizome and rhizome <i>phragmitis</i> ; bamboo leaf, gypsum, <i>Codonopsis pilosula</i> , <i>radix ophiopogonis</i> , <i>pinellia ternate</i> , <i>cogongrass rhizome</i> , <i>rhizoma phragmitis</i> , licorice, and polished round-grained rice, Shengmai Yin	<i>Zhuye Shigao</i> decoction with <i>cogongrass</i> rhizome and rhizome <i>phragmitis</i> ; and the composition of this prescription includes bamboo leaf 15 g, gypsum 15 g (predecoction), <i>Codonopsis pilosula</i> 15 g, <i>radix ophiopogonis</i> 10 g, <i>pinellia ternate</i> 9 g, <i>cogongrass rhizome</i> 15-30 g, <i>rhizoma phragmitis</i> 20 g, licorice 10 g, and polished round-grained rice 30 g above yielded decoction. The recommended Chinese patent medicine: Shengmai Yin	13

RESULTS AND DISCUSSION

The early cases of COVID-19 diseases were diagnosed in China in November 2019, which ultimately made a lockdown in a few regions of China in early 2020. Due to the unavailability of definite modern medicines for the prevention or treatment of COVID-19, China along with other methods of prevention or treatment promoted and

treated [60], 107 Chinese people with TCM. The effective cure rate of QPD against COVID-19 was reported ~90% [4]. In India, the promotion of AMs (Ayurveda, Homeopathy, and Unani) is underway [5].

The results of this study found that different medicines were proposed for the prevention or treatment of COVID-19 by different AM systems. All the proposals for promoting AMs were from China or India. TCMs were primarily promoted by China, whereas Ayurveda, Homeopathy, and Unani were promoted by India. Evidence from the screened records suggests that AMs were primarily considered as a preventive treatment of COVID-19 disease. The detailed mechanism of action of AMs on COVID-19 was not found in the studied records. We found that most of the medicines used were for the treatment of the symptoms (fever, cough, and chest related issues such as pneumonia, chest pain etc.) and boosting immunity. No RCT addressing the antiviral properties of these medicines against COVID-19 was observed. Robust evidence on the effect of these medicines on the COVID-19 life cycle and the infected individuals are lacking, and is required to understand their plausible role in the prevention or treatment of COVID-19.

CONCLUSION

This study limits to selective AM options i.e. Ayurveda, Homeopathy, Unani, and TCM, however other uncovered AMs such as naturopathy, etc. needs to be explored. Scientific lab research and RCTs are lacking for the proposed AMs for COVID-19. Screening for potential candidates *via* in silico analysis using the bioinformatics tool followed by *in vitro* screening of the proposed medicines and RCTs are needed for scientific justification. A detailed investigation of the different combinations of these AMs is warranted to look if there is a definite solution to the COVID-19 disease. Studying other AMs for their efficacy to treat or prevent COVID-19, based on their known activities, would be an opportunity of window that could be explored. More information and research on AMs for COVID-19 treatment is needed from the different geographical locations of the World. This study may form an excellent foundation for developing lab research in the field of AMs and COVID-19, and draw the attention of scientists and researchers throughout the globe to study and understand the biological role of our listed AMs for the prevention and treatment of COVID-19. Following these suggestions, research conducted in this field may determine the importance and value of AMs and probable scope of a full systematic review.

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AN reviewed and wrote the first draft of the review. VS. Conceived the study, reviewed and wrote the final version of the manuscript. ST reviewed the manuscript and gave critical suggestion.

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