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RESEARCH ARTICLE

SIDDHA PROSPECTIVE ASPECT OF IMMUNE BOOSTERS AGAINST COVID - 19

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ABSTRACT

Introduction: Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first identified in December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing2019-20 coronavirus pandemic. As of 4 May 2020, more than 3.5 million cases have been reported across 187 countries and territories, resulting in more than 247,000 deaths. More than 1.12 million people have recovered. Common symptoms include fever, cough, fatigue, shortness of breath and loss of smell and taste. Aim: This study is to study thesiddha prospective aspect of immune bo oster against COVID - 19to follow the seasonal regimen (ruthu sariyai). Results and Discussion: In Siddha, the year is divided into six seasons consisting of two months each. The regular disciplines of food and action are mentioned for each season in Siddha text. This COVID -19 in fection hitted periods are Munpani, Pinpani, Ilavenil and Mudhuvenil. There is no specific medicine to treat coronavirus disease (COVID-19). Therefore, we must enhance our immunity. In Siddha, Various foods and seasonal regimens are mentioned in Siddha authentic literatures to boost the immunity. Mentioned seasonal regimens are validated in this study. The regular disciplines of food and action as mentioned for each season are followed as strictly as possible so that we could avoid the occurrences of the COVID - 19.Condusion: According to the results and discussion of this research seasonal variations altered the body functions. Therefore, our immune system become affected. Its regulation regimen has been mentioned in Siddha medicine. In this seasonal variation affected to body and mind therefore, Siddhars already defined the diet and habits on particular season. This research provides us eful documentation in seasonal regimen to healthier living.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) (1). The disease was first identified in December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019-20 coronavirus pandemic (2)(3). As of 4 May 2020, more than 3.5 million cases have been reported across 187 countries and territories, resulting in more than 247,000 deaths. More than 1.12 million people have recovered (4). Common symptoms include fever, cough, fatigue, shortness of breath and loss of smell and taste (5)(6)(7). While the majority of cases result in mild symptoms, some progress to viral pneumonia, multi-organ failure, or cytokine strome (2)(8)(9). The time from exposure to onset of symptoms is typically around five days but may range from two to fourteen days(5)(10). The virus is mainly spread during close contact. and by small droplets produced when people cough, sneeze, or talk.

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These small droplets may be produced during breathing but the virus is not generally airborne. People may also catch COVID19 by touching a contaminated surface and then their face. The virus can survive on surfaces up to 72 hours. It is most contagious during the first three days after symptom onset, although spread may be possible before symptoms appear and in later stages of the disease. Time from exposure to onset of symptoms is generally between two and fourteen days, with an average of five days. The standard method of diagnosis is by reverse transcription polymerase chain reaction (rRT-PCR) from a nasopharyngeal swab. The infection can also be diagnosed from a combination of symptoms, risk factors and a chest CT scan showing features of pneumonia (11)(16). The World Health Organization (WHO) declared the 2019-20 coronavirus outbreak a Public Health Emergency of International Concern (PHEIC)(30,31) on 30 January 2020, and a pandemic on 11 March 2020.(12) Local transmission of the disease has been recorded in many countries across all six WHO regions (13). In siddha system of Medicine described 64 types of suram(Fever). Among these 64 types, compare signs and symptoms which mentioned in siddha medical text and modern medical system of COVID19.(11) Ancient siddhars defined 4448 diseases in earth therefore these all-time tested

medical system with specific treatment and management with clear prognosis with standard treatment protocol of siddha medical system also therefore COVID-19's signs and symptoms were mostly correlated with Suram(Fever) in Sri Lankan siddha medical respectively.(11)(14) text "Kudalthannil seethamalathu suramum varathu" In siddha text explained that Suramis caused by seetham (Aamam). Therefore, elimination of Aamamby improving the agni in preventive measures (21). There is no specific medicine to treat coronavirus disease (COVID-19). Therefore, we must enhance our immunity. In Siddha, Various foods and regimens are mentioned in Siddha authentic literatures to boost the immunity. This study is to study the siddha prospective aspect of immune booster against COVID – 19 to follow the seasonal regimen (ruthu sariyai). The characteristics of people vary according to the seasonal variation (Ruthu sariyai) Therefore, it is imperative to know about Ruthu sariyai. Ancient Tamils had their own divisions of the year into different seasons (Perumpozhuthu) and of the day (Sirupozhuthu) (15).

பெரும்பொழு தென்றா சிறு பொழு தென்றா இரண்டு கூற்ற தியம்பிய பொழுதே

The year is divided into six seasons consisting of two months each. The division from Tamil month of December (Mid December – Mid January) (i.e.) starts in Early winter and ends with November (i.e.) latter rainy season. The different seasons are *Kaar, Koothir, Munpani, Pinpani, Ilavenil* and *Mudhuvenil Kaalam* (15).

MATERIALS AND METHODS

Research Type: Systematic Review

Research Design: Collection of data from the available authenticated Sir Lankan Tamil siddha texts which are printed books. Then, analysis with simple descriptive statistical Relative Citation Score of comp are data and finalize the results as conclusion of this research.

RESULTS AND DISCUSSION

Immunity: This may be defined as the body's ability to identify and resist large numbers of in fectious and potentially ham ful microorganisms, enabling the body to prevent or resist diseases and inhibit organ and tissue damage. The immune system has two distinct but overlapping mechanisms with which to fight invading organisms, the antibody-mediated defense system (humoral immunity) and the cell-mediated defense system (cellular immunity).

Immunomodulators: These are biological or synthetic substances that canstimulate, suppress or modulate any aspect of the immunesystem including both adaptive and innate arms of theimmune system. The phytochemical analysis of plants has revealeda large number of compounds including tannic acid, flavonoids, tocopherol, curcumin, ascorbate. carotenoids, polyphenols, etc., which have been shown to have potentimmunomodulatory properties.various s econd ary metabolites (e.g., alkaloids, glycosides, saponins, flavonoids, coumarins, and sterols) exhibit a wide range of immunomodulating activity (18).Mechanisms immunomodulation activity occur mainly viaphagocytosis stimulation, macrophages activation, immunostimulatory effect

on peritoneal macrophages, lymphoidcells stimulation, cellular immune function enhancement andnonspecific cellular immune system effect, antigen-specificimmunoglobulin production increase, in creased nonspecificimmunity mediators and natural killer cell numbers, reducing chemotherapy-induced leukopenia, and increasing circulating total white cell counts and interleukin-2 levels.(18)

Concept of immunity in Siddha: A person is called healthy or aarokkiya, if he possesses an equilibrium state of the doshas (body humors), agni (bio-digestive fire), dhatus (tissues), and malas (waste products ofbody) associated with a pleasant state of soul, sensory organs and mind. It is the basis for normal immunity. Disequilibrium or derangement of doshas etc. causes diseases (17)(19)(20)(21). The body is firmly supported by vatham, pitham and kapham, which are situated in the lower, middle and upper portions respectively. Abnormal and vitiated vatham causes derangement of the immune system that produces diseases. Hence Siddha states that this dosha is the prime because it controls all body systems. Agni is represented by pitham in the body and produces good or bad effects depending on its normal or abnormal state. Abnormal and vitiated pitham greatly disturbs the digestion and metabolism leading to development of diseases. Abnormal and vitiation of kapham greatly alters the immune system resulting in disease. Diminished state of doshas is not capable of vitiating other dhatus. But once doshas cease their normal functions, it will disturb the entire physiological functions and as a result, may cause disease or may not be capable to counteract the pathogenic causative agents thus also resulting in disease (17)(19)(20)(21)

Total of seven *dhatu* (tissues) are mentioned in the Siddha texts i.e. *saaram*, *chenneer*, *oon*, *koluppu*, *enpu*, *moolai* and *Sukkilam*/ *suronitham*. All the above seven *dhatu* support and nourish the body. Nourishment is intrinsic to life and an important tool in the fight for survival against pathogenic microorganisms. Whenever the expression or function of one of these *dhatu* is impaired, immune disturbance occurs and develops diseases (17)(19)(20)(21). Proper elimination of the malas indicates good health, and any abnormality is the cause of disease development. *Jatharagni* is the chief among all the *agnis* because the functions of *bhutagni* and *dhatvagni* are dependent upon *jatharagni*. Most of the diseases develop due to deranged state of *agni* (17)(19)(20)(21)

Mucosal surfaces versus kapham: Mucosa covering the respiratory, digestive, and urogenital tracts; the eye conjunctiva; the inner ear, and the ducts of all exocrine glandscontain cells of the innate and adaptive mucosal immune system that protect these surfaces against pathogens. In the healthy adult, mucosaassociated lymphoid tissue (MALT) contains 80% of all immune cells within the body and constitutes the largest mammalian lymphoid organ system. MALT has three main functions: (1) to protect the mucous membranes from invasive pathogens; (2) to prevent uptake of foreign antigens from food, commensal organisms, airborne pathogens and particulate matter, and (3) to prevent pathologic immune responses from foreign antigens if they cross the mucosal barriers of the body. These events may be correlated to functions of the five types of kapham (17)(19)(20)(21)

Immune-complex formation related to Siddha: Clearance of antigen by immune-complex formation between antigen, complement, and antibody is a highly effective mechanism of host defence.

 $Table\ 1.\ Descriptio\ n\ abo\ ut\ season al\ regimen\ in\ COVID\ -19\ o\ utbreak\ seasons\ [15]$

Description	Munpani (Early winter season)	Pinpani (Latter winter	Ilavenil (Early summer season)	Mudhuvenil (Latter summar
Derangement of	inner body temperature	season) Kapham increases and	The Kapham that has increased in	season) The climate will be hot, the water
Dhosa and Dhathukkal	no proper intake of food the Samana vayu destroys the seven phy sical constituents.	As a consequence, warmth, dryness and irritation in the throat occur.	the latter winter worsens with the involvement of <i>Pitham</i> and causes <i>Kapha</i> diseases.	resources dry, Kapham, subsides and Vatham increases and the mankind is liable for all diseases. Diseases due to the derangement of Vatham occurs predominantly.
Taste which neutralize the Dosha	Astringent, Sweet, sour, salt, oily and warm food	Sweet, bitter, astringent, dry and cold food	Bitter, pungent, astringent, dry and warm food	Sweet, oily cold food and
Pre ventive measures	Oleation therapy	Consume sweet and oily foods	Deranged Kapham - Nasiyam - (Nasal application) and Vamana (emetic therapy) are advised.	Sweet, moist, oily and quickly digestible food are advised for healthy living during summer.
Oleation therapy	The oil applied to the head and body should be chosen in such a way that it neutralizes <i>Vatham</i> . Neutralize <i>Vatham</i> maintains the equilibrium of <i>pitham</i> and <i>kapham</i> .	-	Oleation therapy should be given with oils the neutralise the deranged <i>Kapham</i> . The oil application should be done for the head, trunk and the limbs and especially for the feet	-
Bath	bath powder – astringent use warm water for bath	-	Oleation is followed by bath with warm water and application of <i>Akil</i> and Sandal paste.	Sandal wood paste along with camphor is applied on the body for its cooling effect.
Fumigation	used during this season		Mild fum igation	- Out 14- 41 41-1 C - 1
Food	Oily food, Vaat kothumai, Samba kothumai	consume sweet and oily foods and preventive measures should be taken to control the <i>Kapham</i> .	Food made of old rice and dhal, cow's ghee, vegetables and fruits the food consisting of all six tastes should be cherished by chewing, licking and drinking.	Quickly digestible food. Sixteen varieties of Samba rice are mentioned for consumption for living healthy life during summer They are Mai samba, Kaayan samba, Mallikai samba, Kaadai samba, Kunrimani samba, Ceeraka samba, Milagu sambu, Kurum samba, Kaivarai samba, Kodai samba, Kallundai samba, Eerkku samba, Puzhugu samba, Korai samba, Mani samba and Annamazhaki.
Snacks	-	1	Snacks made of wheat, rice, groundnut, horse gram and ghee are advised for this season.	Paayasam is a sweet pudding prepared with milk sugar, bam boo rice and wheat.
Meat	-			Meat of goat, ram, antelope, wild pig, sparrows, skylark, grouse, local birds, chicken, partridge, hen and egg etc are preferred in summer as non-vegetarian food.
Fruits	-	-	Banana, mango, jack and grape fruits with or without sugar cane juice, sugar candy, honey may be taken. The fruit with sugar and honey could be preserved in the mud pots kept or placed in the earth-pits and consumed after a specific period of time.	Bananas (the larger varieties and hill bananas), the grapes, the jack fruit and pomegranate are good. Apart from this, Bassia latifolia, Myristica fragrance, sweet fragrant cardamom, palm sugar tongs, cane sugar and honey are made into a mixture in a new pot. This mixture is called as panchamirta, a sweetened preparation of very rich quality, ethnic to Tamil Nadu.
Drinking water	-	1	The boiled water is poured into a new mud pot and honey the powders of sandal or vetiver are added to it, cooled and used for drinking.	Paadhiri flower (Stero sperm) and camphor are added to the boiled water and consumed during summer season.
Sleep	Silk and woolen bed sheets are preferable	-	-	-
Morals to be done in the season	Exposing in the evening sunlight and brisk physical activity until the body sweats are advisable in the ewning. One should wear a footwear for protection.	-	Physical manipulation (Thokkanam), maritial arts (Boxing) and fighting with sticks (Silam bam)	One should reside in farm houses with beautiful flowery plants and spend time in cultural activities and avoid alcohol, salt, sour, pungent and hot food. Easily digestible food with sweet taste and oily food are preferred.

Continue..

Deeds to be avoided during the season	-	The place of residence should be free from cold wind and the food with the taste that increases <i>Vatham</i> like bitter, pungent or astringent and cold food should be avoided.	Food that are sour, sweet, cold and oily are not preferable and sleep during day time is best avoided in early summer. Food stuff with hot potency are to be avoided.	Sour, bitter food and alcohol are to be avoided. Too much exposure to sun and exertion also to be avoided.
The residence places	-		The ideal cottage for this season is in a surrounding of flowery trees with good fragrance. The ever flowing rivulet with resounding music and climbers with nice flowers should cover to the top of the cottage to provide enchantment. The sunrays hardly tires the person, who lives in this cottage; the pastime being spent in swimming in the rivulet or tanks nearby.	The shades of the tall pandanus, areca-nut, mango, akil, banyan, bael, Shorea robusta (white), Saraca indica, Calophyllum inophyllum, Sandalum indicum, Pongamia glabra and fruit bearing palm are ideal. The roof of the hut should be covered with jasmine and other flowering creepers providing cool shade. The cot is covered with banana bark fibre. Lotus and water lilies are also spread on it. In such comforts one should sleep during hot summer. The windows and doors are coverd with cloth soaked in rose water. Screens made of vetiver (Vettivera zy zoroidus) are also used. Water is sprinkled on them frequently using spring pots. The cools down the room temperature and helps to escape from the onslaught of the latter summer.

Table 2: Description of tastes that neutralize the tri humors (21)

Guna	Cognitive characters	Tastes	Effects of Vatham, Piththam and Kapham
Seeta	Cold	Astringent, Sweet, Bitter	Increase Vatham, Piththam and decrease Kapham
Ushna	Hot	Salt, Sour, Pungent	Increase Kapham and decrease Vatham, Piththam
Rooksha	Dry	Astringent, Pungent, Bitter	Increase Vatham, and decrease Kapham

Table 3: Description of food stuffs and its uses

Literally mentioned foods stuff	Botanica I name	Uses	
Santharam	Santalım album	Sandal wood is gives relief from <i>Vatha pitham, Iyam</i> , fever, thirst, Body heat, ithing in the body and it is give strength to the body (22) Santalum album has anti-fungal activity, anti-bacterial activity, anti-viral activity against Herpes Simplex Virus 1 & 2 (HSV-1 & 2), anti-ulcerogenic activity, anti-inflammatory effect and anti-pyretic effect.(23)	
Paathiri flower	Stereospermum chelonoides	It gives relief from <i>Iththa suram</i> and <i>veddai</i> (22) The flower is used to treat makria, bronchitis, heart diseases, cancer, purgative, in the treatment of bleeding diseases, diarrhoea of the pitta type and it is good for the throat. The <i>Padhiri</i> flowers are also used to treat hiccup. These flowers are mixed with honey and given orally (24)	
Vettiver	Vetiveria zizanioides	It gives relief from thirst which are produce by Piththam, Somarogam, Kaamilam, laundice, Karaipiththm, raththa piththam, anal suam, leprosy, head diseases, diseases in neck, sukkila nastam, unmantham, burns, diseases in eye and meha kaddi.(22) The roots are aromatic, antifungal action, cooling, antiemetic, diaphoretic, haemostatic, expectorant, diunetic, stimulant, hysteria, insomnia, skin diseases, asthma, amentia, amenorrhoea, antispasmodic, kidney problems, gall stones, mosquito repellent, tonic and antioxidant.(25) This root has anti-oxidant activity, anti-bacterial property, anti-fungal and antituberculosisactivity.(25)	
Camphor	Cinnamomum camphora	Camphor is gives relief from <i>Kirumi, Sanni, Piththa Suram, Piththam, See thala vatham,</i> respiratory diseases, vomiting, indigestion, burns, ear diseases and facial diseases (26).	
Old rice		Appetizer, Cooling, Neutralize the Kapham(26)	
Cow's ghee		It gives relief from cough, hiccough, Haemorrhoid, abdominal pain, vomiting, heartburn, thirst, <i>Pirameham</i> and <i>Vatham</i> .	
Horse gram	Macrotyloma uniflonim	It gives relief from Pain, Smusitis, Chills with fever, gastritis and respiratory infection. Neutralize vatham, Pitham (26)	
Moongil rice	Bambusa arundinaceae	Anti-uleer activity	
Wheat	Triticum aestivum	Tonic, enhance the sperm production, increase the body heat, Neutralize the <i>Vatham</i> and <i>Kapham</i> , Increase the <i>Jadarakkini</i> . Wheat can use by diabetic patients.	
Butter tree	Bassia latifolia	The flowers are regarded as cooling, tonic, and demulent. They are used in the treatment of coughs, colds and bronchitis.	
Nutmeg	Myrisica fragrance	It is therapeutic potentials include antioxidant, anti-inflammatory, chemo preventive, anti-obesity, antiangiogenic, neuroprotective, analgesic, antithrombotic, hepatoprotective and aphrodisiac properties.	
Sweet fragrant cardamom	Elettariacardamom	It has iron, Vitc & B-6, Calcium and magnesium. It is used for digestion problem.	
Palm sugar tongs		It's neutralized the Vatham, Pitham & Kapham. It is good for Vatha gunmam.	
Cane sugar		Consumption of small quantity is good for Pirameham, Pithha Kopam & Cough.	
Sugar cane			
Honey		Appetizer, neutralize the Kapham	
Sugar cady		It gives relief from Pallaranai, Kaasam, Vomiting and Body heat Neutralize the Kapham	
Banana		Sevvalai, Velvaalai, Irasathali and Monthan vaalai are good for disease patient. Neutralize the Pithan, Reduce the body heat & it has laxative activity. It has vitamin C& B-6&fiber.	
Mango		Enhance the sperm production It has Vit A& C	
Jack fruit		Sweet taste. It has Vit C	
Grapes		Cooling, Enhance the vision, increase the blood formation & sperm production. It has vitaminc.	
Pomegranate		Cooling, Increase the blood formation. It has vitam in C& B-6& dietary fiber.	

However, depending on the level of immune complexes formed and their physicochemical properties, immune complexes may or may not result in host and foreign cell damage. After antigen exposure, certain types of soluble antigen-antibody complexes freely circulate and, if not cleared by the reticuloendothelial system, can be deposited in blood vessel walls and in other tissues such as renal glomeruli and cause vasculitis or glomerulonephritis syndromes. All these events may be correlated to disturbed doshas invade tissues and affect whole body in gradations in abnomal srotas, and if kapha etc. perform normally then it leads to efficient clearance of immune complexes and immune complex mediated diseases (17)(19)(20)(21) Concept of immunity has been widely described in detail in Siddha texts because the main goal of Siddha is to optimize the health an individual and cure disease. Equilibrium of agni, srotas, dosha, dhathualong with the associated pleasant state of soul, sensory organs and mind is essential for good health. Regulated food, sleep and celibacy are the golden triangle for excellent health (17)(19)(20)(21)

Munpani (Early winter season): During this season, mankind will be healthy. The inner body temperature increases and appetite is more. If there is no proper intake of food the Samana vayu destroys the seven physical constituents. Food with sweet, sour an astringent taste are preferable for this period. The oil applied to the head and body should be chosen in such a way that it neutralizes Vatham (15)

Pinpani (Latter winter season): During the latter winter, *Kapham* increases and dry condition prevails. As a consequence, warmth, dryness and irritation in the throat occur. To counter these effects, one could consume sweet and oily foods and preventive measures should be taken to control the *Kapham* (15)

Ilavenil (Early summer season): The *Kapham* that has increased in the latter winter worsens with the involvement of *Pitham* and causes *Kapha* diseases. To overcome the ill effects of the deranged *Kapham*, *Nasiyam* – (Nasal application) and *Vamana* (emetic therapy) are advised. Physical manipulation (*Thokkanam*), maritial arts (Boxing) and fighting with sticks (*Silambam*) are advised for the period of early summer (15)

Mudhuvenil (Latter summer season): The sun is responsible for the blooming of the lotus. The climate will be hot, the water resources dry, Kapham, subsides and Vatham increases and the mankind is liable for all diseases. Diseases due to the derangement of Vatham occurs predominantly. Sweet, moist, oily and quickly digestible food are advised for healthy living during summer (15). The winter season gives good health both for human beings and the plants. Early summer and the latter rainy season give moderate health, early rainy season and latter summer are the periods of diseases.

In general, Validate the data that are reported in the literatures: Tastes that are neutralize the *Vatham:* Sweet, Sour, salt Tastes that are neutralize the *Piththam:* Sweet, bitter, astringent Tastes that are neutralize the *Kapham:* Pungent, Astringent, bitter (21)

Oleation (Oil bath): Oil bath gives strength to the five sense organs i.e. skin, tongue, eyes, nose and ears. It also gives strength to the head and limbs. It is good to take oil bath daily. By this, the body ache is relieved; senility will be postponed. Eyes get clarity of vision. Sound sleep, body strength and longevity are ensured. Skin gets smoothened and softened.

It dispels drowsiness, *Kapham*, tri-humors and altered taste. (19)(20)

Silk cotton bed: If on e sleeps in the bed of silk cotton bed it removes the sense of heat (19)(20)

Woollen bed: Sleeping in the bed made of woollen stuff is beneficial to prevent the fever with rigor. It also protects from extreme cold weather fog and menorrhagia (19) (20).

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). In Siddha, the year is divided into six seasons consisting of two months each. The regular disciplines of food and action are mentioned for each season in Siddha text. This COVID -19 infection hitted periods are *Munpani, Pinpani, Ilavenil* and *Mudhuvenil*. There is no specific medicine to treat coronavirus disease (COVID-19). Therefore, we must enhance our immunity. In Siddha, Various foods and seasonal regimens are mentioned in Siddha authentic literatures to boost the immunity. Mentioned seasonal regimens are validated in this study. The regular disciplines of food and action as mentioned for each season are followed as strictly as possible so that we could avoid the occurrences of the COVID - 19.

Conclusion

According to the results and discussion of this research seasonal variations altered the body functions. Therefore, our immune system become affected. Its regulation regimen has been mentioned in Siddha medicine. In this seasonal variation affected to body and mind therefore, Siddhars already defined the diet and habits on particular season. This research provides useful documentation in seasonal regimen to healthier living.

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