CODEN [USA]: IAJPBB ISSN : 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187
https://doi.org/10.5281/zenodo.6821626

Avalable online at: http://www.iajps.com *Review Article*

# A HYPOTHETICAL REVIEW OF MAKING SUBLINGUAL FORMULATION BY USING KABASURA KUDINEER CHOORANAM FOR PREVENTION AND MANAGEMENT OF COVID-19 VIRUS

**Koteeswaran. K[1]***

[1]Sankaralingam Bhuvaneswari College of Pharmacy, Sivakasi

**Article Received:** May 2022 **Accepted:** June 2022 **Published:** July 2022

**Abstract:**

*COVID-19 that is Corona Virus disease 2019 has been considered as major life- threatening disease, and it is danger to the human population worldwide then, they are caused by Severe Acute Respiratory Syndrome Corona Virus-2 that is SARS-CoV-2. The traditional Indian medicines also play an important role for targeting of SARAS-CoV-2 and its pathway. Amid of Siddha Medicines, the formulation of Kabasura Kudieer and they are composed of 15 ingredients which are used for against fever caused by respiratory infection. That traditional formulation of Kabasura Kudineer Chooranam used by Siddha practitioners because they are effectively and managing the common respiratory ailments such as flu and cold, and also they possess strong antioxidant, anti-viral, anti-bacterial, anti-fungal, anti-inflammatory, analgesic, anti pyretic and immunomodulatory properties. But these 15 ingredients have some unique characteristic features of its own then, they are extensively used for the lung boosting, and also respiratory mechanism improving, and treating for cold, cough, fever and other respiratory infection. Normally the powdered form of churnam is consumed after they are infusing it in water and making a decoction like consistency. In my review article explained that by modification of Kabasura Kudieer in Sublingual formulation, they are placed under the tongue and they are directly absorbed from the tiny blood vessels via capillaries and they enter much more quickly than oral medication, without experiencing liver metabolism they dispense full amount of mediation directly into blood stream. As a result before absorption they are not interacts with other food and medication and also they do not cause the gastrointestinal irritation of some oral medication.*

**Keywords:** *Kabasura Kudineer Choornam, Antioxidant, Respiratory disease, Sublingual tablet, evaluation*

**Corresponding author:**

**Mr. K. Koteeswaran,**

*Sankaralingam Bhuvaneswari College of Pharmacy,*
*3/77- C, Anaikuttam Road, Anaikuttam- 626130*
*Email: makathu0715@gmail.com, Mobile Number: 7871520266.*

QR code

*Please cite this article in press K. Koteeswaran et al,* ***A Hypothetical Review Of Making Sublingual Formulation By Using Kabasura Kudineer Chooranam For Prevention And Management Of Covid-19 Virus.,*** *Indo Am. J. P. Sci, 2022; 09(7).*

## INTRODUCTION:

In South India, Siddha Medicine is widely practiced and it is a traditional medical system. It was impregnated with ethnic knowledge of Tamil people [1]. Palm Leaf typescript says that Lord Shiva described the Siddha system was first to his wife Parvathy. Then Lord Muruga learning all of these knowledges from his mother Parvathy. Then Lord Muruga teach all of these knowledges to his Disciple Sage Agasthiyar. Then the knowledge about siddha is taught by Agasthiyar to 17 Siddhars and they spread it to the human beings.

'Siddhi' is the word came from the word Siddha. And who are attained this known as Siddhars. For all branch of science they wrote literature in classical Tamil language and it is mostly practiced in Southern Part of India [2].

**Fundamental Principle of Siddha Medicine:**

Five elements such as earth, water, fire, air and ether these elements are together to form the human beings in different combination. The body physiological function has been mediated by three substances which are made up of these five elements, they are Vatham, Pitham, Karpam. These three substances can co-exist and function harmoniously in each and every cell of the human body. Dhatus known as tissues and, nervous actions such as movement, sensation etc., which are controlled by Vatham and, metabolic activity of the body digestion, assimilation, warmth etc., which are controlled by Pitham and, stability is controlled by Kapam [3].

In siddha system restoring balance o the mind body system is the main treatment to be aimed. Diet and lifestyle plays a vital role for not only maintaining health, but also they are used for curing diseases. Pathiam and Apathiam there are the concepts of siddha medicine which is essentially a list of do's and don'ts [4].

**Kabasura Kudineer Choornam:**

Fifteen Herbal ingredients are mixed together to form the compound formulation that is Kabasura Kudineer Chooranam. Mostly they are used for the treatment of fever with or without respiratory infection. In siddha medical forms they are classified into two medical forms that is 32 internal and 32 external medical forms and chooranam is considered to be as internal medical forms. The current drug is further divided into kudineer choranam which are known as a drug is made into decoction and consumed [5].

**Composition of Kabasura Kudineer:**

The meaning of kabasura kudineer is ( Kabam – cold; suram – fever; kudineer – concoction ) and it is a siddha formulation. This herb famously was named as Bile of earh, King of bitters which is the native to India and Srilanka [6]. Fifteen herbal ingredients helps to form this composition that is Zingiber Officinale, Piper longum, Syzygium aromaticum, Tragia involucrate, Hygrophila auriculata, Saussurea Lappa, Anacyclus pyrethrum, Terminalia chebula, Coleus ambonicus, Adhatoda Vasica, Tinospora cardifolia, Clerodendron serratum, Suda acura, Andrographis paniculata, Cyperus rotundus [7].

- Zingiber officinale their beneficial activity in treating asthma, and they also help to promote digestion.
- Piper longum have an excellent potential activity on cough, asthma and indigestion.
- Syzygium aromaticum they help to promote liver health and they have also an ability to kill the bacteria, Tragia involucrate have an analgesic activity and also bronchitis.
- Anacyclus pyrethrum which help to treat mouth ulcers, sore throats, cough.
- Blood disorders are treated by Hygrphila auriculata [8, 9]
- Terminallia chebulla have an ability to treat cough, anoxia, vomiting, asthma.
- Respiratory and bleeding disease are treated by Adhatoda Vasica.
- One of the traditional medicinal plant such as Coleus amboinicus which helps to treat cough, throat infection, nasal congestion, fever, and digestive problem [8].
- Saussurea Lappa which is helps to treat paralysis, fever, cough, inflammation and, headache.
- For diabetes, high cholesterol, upset stomach and other cancer which are treated by Tinospora cordifolia.
- Clerodendron serratum helps to treat various disease associated with liver and jaundice [10].

Kabasura kudiineer have an properties of antibacterial, anti-helminitic, anti-cariogenic, anti-diabeic, cytotoxic, anti-viral, astringent, anti oxidant and anti inflammatory activity [11]

**Preparation and Indication of Drug:**

The fifteen herbals are taken should be dried and mixed into a powder. Then they are kept in the direct sunlight, because for removing moisture content and in dried chooranam, then water is added to it and heat, when till it reduces to quartered from its initial volume. Then the waste materials are removed by the decoction is to be filtered with the cloth and the

liquid is stored and it is consumed within 3hrs of preparation [12, 13].

5 to 10 grams of chooranam powder is mixed with 300ml of water and it boil it with minimum temperature till the concoction is decreased to 30 ml with nectar. 25 to 50ml of prepared decoction is to drink twice every day or as coordinate by the doctor

**Benefits:**
Kabasura kudineer helps to boost the immune system but they have no side effects and, reduces symptoms. But they are commonly used for fever, dry cough, sneezing, anosmia, relief body pain and at viral epidemic they act as prophylactic, their mechanism is to boost immunity [14]. They are safe when taken with homeopathic medicine, and also they do not produce any side effects when taken with multivitamins and mineral supplements [15].

## MATERILS AND METHODS:

**Sublingual Tablet:**
Sublingual administration of the drug may be defined the drug to be placed under the tongue then the drug reaches the blood stream directly through the ventral surface of the tongue and floor of the mouth. In underneath of oral mucosa the reticulated vein is to be present so the drug solutes are absorbed rapidly then they transported through the facial vein, internal jugular vein, brachiocephalic vein and then passes to the systemic circulation. They help to providing direct systemic administration, because in this route presence of highly vascularized buccal mucosa they help to allow the substance direct access to the blood stream [16].

**Mechanism of Sublingual Absorption:**
The mucosal lining is divided into three distinct layers. The epithelium membrane is outermost layer which consist of stratified epithelial cells and also act as a protective barrier function. The basement membrane is the innermost layer of epithelial membrane that replenishes the epithelium. The lamina propria is present below the epithelium followed by the submucosa. The lamina propria act as hydrated and less dense layer of connective tissue and also they contain collagen and elastic fibres [17].

In sublingual region the drug is absorbed through the mucous membrane, the dug instantly diffuses in the venous blood. The sublingual region of venous blood then the oral cavity drains into a common trunk, then passes via the internal jugular vein, the subclavian vein, and the brancheocephalic vein and directly passes into superior vena cava. Then they enter into the systemic circulation, bypassing the pre-systemic drug elimination, but they are not similar to oral administration. Due to direct drainage into the systemic circulation helps to give immediate systemic availability and also give rapid onset of action. But drug absorption may be affect due to smoking because they cause vasoconstriction [18].

**Factors Affecting Sublingual Absorption** [19]:
**Oral Epithelium Thickness:**
The sublingual epithelium thickness range is 100-200µm which is less compared to buccal thickness. So, due to presence of thinner epithelium the absorption of drug is faster and also immersion of drug in smaller volume of saliva.

**Lipophilicity of Drug:**
For good absorption, the drug must have slightly higher lipid solubility then that required for GI absorption is important for passive permeation

**pH and pKa of the Saliva:**
The pH of saliva is 6.0, this pH is important for good absorption of drug and also they remain unionized. Also, through oral mucosa the absorption of drug occurs if the pKa is greater than 2 for acid and for base less than 10

**Oil to Water Partition Coefficient:**
The partition coefficient of oil to water range is 40-2000 and it is considered as an optimal for the drug to be absorbed sublingually

**Formulation Aspects of Sublingual Tablet:**
During formulation of sublingual tablets, selection of suitable excipients of bland taste resulting in a rapidly disintegrating tablet their by the dissolution of active ingredient is enhancing [20]
Three technologies are available for manufactured of sublingual tables. They are

i. Compression Moulding
ii. Direct Compression
iii. Freeze Drying

For preparation of nitroglycerin tablets the compression moulding technique is used since early nineteenth century. But currently direct compression and freeze-drying methods are commonly used for commercially manufacturing sublingual tablets.

**Direct Compression Method**
Direct compression is one of the commercially manufacturing sublingual tablets. It is cost-effective and also a simple process and by this technique, prior to lubrication and compression they do not need further granulation steps. In this direct compression technique gives good mechanical strength and also acceptably fast disintegration [21]

In this technique they contain directly soluble excipients, lubricant and super disintegrant agent. It may also contain dry binder, microcrystalline cellulose, buffer, sweetening agent, surface active agents and flavor. Excipients of sugar based are widely used because of their sweetness and high aqueous solubility and also pleasant feeling in the mouth and act as masking the bitter taste. Maximum all sublingual tablets may be prepared with some saccharide based material [22]. Effervescent agents are also used sometimes for increasing disintegration and dissolution of sublingual tablets.

**Evaluation for Sublingual Formulation** [23-26]
They are divided into two types

- Pre-compression
- Post-compression

**Pre-compression**
**a)** Angle of repose
Determined by Funnel Method
Weigh the mixture accurately and take in a funnel. The funnel height is adjusted in such a way that funnel tip touches the apex of the heap of mixture. Then the mixture of drug and excipients was allowed to flow through the funnel freely on to the surface and the diameter of the powder cone formed is to be measured.

Formula for Angle of repose

$$\tan \emptyset = \frac{h}{r}$$

Where, h is the height of the powder cone and r is the radius of powder cone
**b)** Bulk Density
A weighed quantity of mixture was poured into a graduated measuring cylinder, volume and weight are measured
Bulk density = $(weight\ of\ powder)/(volume\ of\ packing)$
**c)** Tapped Density
By using graduated measuring cylinder and place a known weight of drug excipients mixture. At a height of 10cm and interval 2 seconds and tapping was continues till further no change in volume noticed.
Tapped density = $(weight\ of\ powder)/(volume\ of\ tapped\ packing)$

**Post-Compression**

- Sublingual formulations like tablets and films, and their batches are evaluated for weight variation and drug content, but for tablets hardness and friability were calculated

The important factor is hardness of sublingual tablets because if the sublingual tablet is too hard, the solvent-borne drug remains at surface portion of the tablet because attenuation may not occur in the interior portion of the tablet [27]

- But, if too soft of the sublingual tablets they maybe disintegrated by solvent of the drug attention. In this condition the solvent-bornedrug attenuation should be absorbed into the interior of sublingual tablets

**d)** Disintegraion time
A simple method relatively with vigorous condition has been developed to evaluate the disintegrating time of sublingual tablets. Each of the separated tablets are put into 10ml glass tube that is 1.5-cm diameter which contains 2ml distilled water, and the stopwatch is required for note the timetaken to complete tablet disintegrating and, observed visually.

In USP disintegration test, the disintegration apparatus for oral tablets is used among the covering plastic disks and 2 mints is an time limit for acceptable of sublingual tablet disintegration [28]

**e)** Wetting Time
Wetting test is not a USP standard test but it is very useful for quality control and also gives supportive evaluation for these sublingual tablets. By this test to examine the moisture is to penetrate the tablet completely is measured and also represents the time required to release the drug in the presence of minute volume of saliva [29]

**f)** Friability Test
Weighing twenty tablets and it is placed on Roche Friabilator and the equipment has to be rotated at 25 rpm for 4 mints. Then they are taken out and reweighted and the percentage is calculated.
% Friabiliy = $(loss\ in\ weight)/(initial\ weight) \times 100$

**g)** Thickness Test
By using Vernier Caliper thickness of the tablet is to be determined. Then average value of the thickness is calculated by taking the tablet in triplicate ad then the mean ± standard deviation and the thickness values are notified

**h)** Tablet Hardness
Force applied across the diameter of the tablet until to break of tablet it is called as hardness of tablet. Hardness test can be done by using instruments like Pfizer hardness tester or Monsanto hardness tester

**i)** Water Absorption Ratio

Water absorption ratio can be determined by the equation
R = 100 $(wb - wa)/wa$

**j)** Invitro Drug Release
By using USP dissolution apparatus II the in vitro drug release is to be studied and they are run at 50 rpm in 900 ml of phosphate buffer pH 6.8 at 37±0.5ºC. 10 ml of sample is withdrawn and filtered is taken at different time interval. After that the absorbance of the sample is calculated by UV spectrophotometer, then the mean value of drug release can be calculated by cumulative % drug release Vs time.

## CONCLUSION:

Kabasura Kudineer is indicated for use in fever (Aiya Suram) and respiratory disease (Aiya Noigal) in Siddha system of medicine. They consist of 15 herbal ingredients are shown to possess antiviral activity. For increasing stability time, producing fast actions, consuming required dose and masking bitter taste, making a sublingual tablet is very useful. Sublingual tablet of kabasura chooranam is taken without need of water and also readily dissolved in mouth with producing quick actions and pleasant taste, these helps to reduce the dose related side effects, reduces nauseatic effects and also helps in preventing and management of COVID-19.

**Abbreviations:**
Not applicable

**Acknowledgement:**
I here by acknowledge that I prepared the project. And all the details are correct to the best of my knowledge.

## REFERENCE:

1. Mahadevan H, Palraj V. Literature review on Siddha herbal formulations (Kudineer) available for the management of Dengue. International Journal of Pharmacology and Clinical Sciences. 2016;5(3).
2. http://www.thesiddha.com/siddha-medicine.
3. http://healthmantra.com/siddha/origin.shtml.
4. http://nischennai.org/siddhamedicine.html.
5. John A, Jayachandran R, Ethirajulu S, Sathiyarajeswaran P. Analysis of Kaba Sura Kudineer Chooranam-a siddha formulation. Int Ayurvedic Med J. 2015 Sep;3(9):2915-20.
6. Mahadevan H, Palraj V. Literature review on Siddha herbal formulations (Kudineer) available for the management of Dengue. International Journal of Pharmacology and Clinical Sciences. 2016;5(3).
7. Thanigavelan V, Kaliyamurthi V, Kumar MP, Elansekaran S, Rajamanickam GV. An overview of the Herbs in a Siddha Polyherbal decoction-Pidangunaari Kudineer indicated for Hepatomegaly. Journal of Applied Pharmaceutical Science. 2012 Jul 30;2(7):08-14.
8. Rajeshkumar S, Kumar SV, Ramaiah A, Agarwal H, Lakshmi T, Roopan SM. Biosynthesis of zinc oxide nanoparticles usingMangifera indica leaves and evaluation of their antioxidant and cytotoxic properties in lung cancer (A549) cells. Enzyme and microbial technology. 2018 Oct 1;117:91-5.
9. Sujitha, J., Asokan, S. and Rajeshkumar, S. Antidermatophytic Activity of Green synthesized Zinc oxide nanoparticles using Cassia Alata Leaves. Journa of Microbilogy, Biotechnology and Food science, 2018, pp. PP. 348-352. doi: 10.15414/jmbfs.2018.7.4.348-352.
10. Zysk KG. Religious Medicine: History and Evolution of Indian Medicine. Routledge; 2017 Oct 23.
11. Lakshmi T, Krishnan V, Rajendran R, Madhusudhanan N. Azadirachta indica: A herbal panacea in dentistry–An update. Pharmacognosy reviews. 2015 Jan;9(17):41.
12. Lakshmi T, Ezhilarasan D, Vijayaragavan R, Bhullar SK, Rajendran R. Acacia catechu ethanolic bark extract induces apoptosis in human oral squamous carcinoma cells. Journal of advanced pharmaceutical technology & research. 2017 Oct;8(4):143.
13. 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 Pacific journal of tropical medicine. 2011 Oct 1;4(10):819-23.
14. Rocke J, Hopkins C, Philpott C, Kumar N. Is loss of sense of smell a diagnostic marker in COVID-19: a systematic review and meta-analysis. Clinical otolaryngology. 2020 Nov;45(6):914-22.
15. Bai Y, Yao L, Wei T, Tian F, Jin DY, Chen L, Wang M. Presumed asymptomatic carrier transmission of COVID-19. Jama. 2020 Apr 14;323(14):1406-7.
16. Ishikawa T, Koizumi N, Mukai B, UTOGUCHI N, FUJII M, MATSUMOTO M, ENDO H, SHIROTAKE S, WATANABE Y. Pharmacokinetics of acetaminophen from rapidly disintegrating compressed tablet prepared using microcrystalline cellulose (PH-M-06) and spherical sugar granules. Chemical and pharmaceutical bulletin. 2001;49(2):230-2.

17. KL moore, AF Dalley, Anne MR. Agur. Eds. Clinically Oriented Anatomy. 6th edition. [book auth.] Lippincott Williams and Wilkins. Philadelphia : s.n., 2009, p. p.944.
18. Kurosaki Y, Takatori T, Nishimura H, Nakayama T, Kimura T. Regional variation in oral mucosal drug absorption: permeability and degree of keratinization in hamster oral cavity. Pharmaceutical research. 1991 Oct;8(10):1297-301.
19. Richman MD, Fox CD, Shangraw RF. Preparation and stability of glyceryl trinitrate sublingual tablets prepared by direct compression. Journal of pharmaceutical sciences. 1965 Mar 1;54(3):447-51.
20. Koland M, Sandeep VP, Charyulu NR. Fast dissolving sublingual films of ondansetron hydrochloride: effect of additives on in vitro drug release and mucosal permeation. Journal of Young Pharmacists. 2010 Jul 1;2(3):216-22.
21. Bayrak Z, Tas C, Tasdemir U, Erol H, Ozkan CK, Savaser A, Ozkan Y. Formulation of zolmitriptan sublingual tablets prepared by direct compression with different polymers: In vitro and in vivo evaluation. European Journal of Pharmaceutics and Biopharmaceutics. 2011 Aug 1;78(3):499-505.
22. Chang RK, Guo X, Burnside BA, Couch RA. Fast-dissolving tablets. Pharmaceutical technology. 2000;24(6):52-.
23. https://pharmlabs.unc.edu./labs/tablets/molded.htm
24. Okuda Y, Okamoto Y, Irisawa Y, Okimoto K, Osawa T, Yamashita S. Formulation design for orally disintegrating tablets containing enteric-coated particles. Chemical and Pharmaceutical Bulletin. 2014 May 1;62(5):407-14.
25. Anil PA, Solanki KP, Pandya V, Dholakia S. Fast Dissolving Tablets: As a Preferred Alternative to conventional tablets.
26. van Schaick EA, Lechat P, Remmerie BM, Ko G, Lasseter KC, Mannaert E. Pharmacokinetic comparison of fast-disintegrating and conventional tablet formulations of risperidone in healthy volunteers. Clinical therapeutics. 2003 Jun 1;25(6):1687-99.
27. Sheeba FR, Acharya GD, Rameshwari S, Jeya AJ. Formulation and evaluation of nifedipine sublingual tablets. Asian J Pharm Clin Res. 2009 Jul;2(3):44-8.
28. Haegeli L, Brunner-La Rocca HP, Wenk M, Pfisterer M, Drewe J, Krähenbühl S. Sublingual administration of furosemide: new application of an old drug. British journal of clinical pharmacology. 2007 Dec;64(6):804-9.
29. MD, ed. Rockville. USP/NF. Physical Tests: disitegration 22/17. United States Pharmacopoeial Convettion Inc. 1990,