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Therapeutic efficacy of *Guduchi* w.s.r to *Madhyama Khanda* of *Sharangdhar Samhita*

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ABSTRACT

Various classics of Ayurveda has many herbs which are highly praised for their high therapeutic values, versatile range of action and easy availability. Along with the use of single herb in the therapy, use of various formulations in the form of *Panchavidha Kashaya Kalpana* is also indicated in the treatment of various diseases. Guduchi, botanically identified as *Tinospora cordifolia* (Wild.) Miers. of family, Menispermaceae is one such highly praised drug by almost all scholars. *Guduchi* is known by various names like *Amruta, Chhinna, Chhinnaruha, Chakra, Chakralakshanika, Dhara, Somavalli* etc. It has been indicated in management of *Jwara* (Pyrexia), *Vatarakta* (Joint disorders), *Kushtha* (Skin diseases), *Kamala* (Jaundice) and many other systemic disorders. Sharangdhar Samnhita is one of the important treatise on *Bhaishajya Kalpana* (Ayurvedic pharmaceutics). *Madhyam Khanda* of *Sharangdhar Samhita* is designed for description of various formulations. It contains dedicated chapter according to the type of formulations like *Swaras. Kwatha, Hima* etc. As like other scholars, *Sharangdhar* has also praised *Guduchi* for its higher therapeutic efficacy. Hence, it is needed to review the *Madhyam Khanda* of *Sharangghar Samhita* for knowing the use of *Guduchi* in variety of formulations.

Key words: *Guduchi, Tinospora Cordifolia, Ayurveda, Sharangdhar Samhita*

INTRODUCTION

Therapeutics of Ayurveda, mainly deals with use of herbal and herbo-mineral compounds, in the form of single drug or a scientifically designed formulation. Acharya Charaka has underlined the importance of knowledge of *Dravya* as; success of the treatment depends on *Yukti* (rational therapeutics). But prior to the application of *Yukti* (rational therapeutics) the physician should always possess complete knowledge about drugs.[1] *Charaka* has given freedom to the physicians to design combinations. According to *Charaka*, thousands or crores of combination can be planned & prepared by the wise physician with his own intellect and experience. There is no limit for framing new formulations as there exists a wide scope for multidrug combinations.[2] Ayurvedic classics like *Charak Samhita* and *Sushrut Samhita* have mainly elaborated polyherbal formulations, in the management of various diseases. As per *Sushruta*, the pharmacology of formulations cannot be understood easily, because the cumulative effect of combined drugs is difficult to perceive. In the medieval period, with the advent of *Rasa-Shastra* (Iatrochemistry), certain heavy metals and minerals have been incorporated into the Ayurvedic therapeutics. Thus, information regarding method of preparation and therapeutic uses of various formulations were compiled by various authors and led to formation of various texts, which are inclined more towards Ayurvedic pharmaco-therapeutics. Thus, medieval

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period shows origin of various *Nighantu* (lexicons) giving detailed information about herbs as well as animal and mineral product used and *Sangraha Grantha* which are dedicated towards applied therapeutics, rather than *Saidhantik Ayurveda* (principles of therapeutics).

Gadanigraha of *Shodhala* is the first text, which has classified formulations according to the basis of methods of preparation, e.g. he has explained *Adhyaya*, like *Swaras Adhyaya*, *Kwatha Adhyaya* etc. *Sharangdhar Samhita*, is one of the very important treatises of medieval period, dealing mainly in the drug manufacturing part. It is recognized as a standard book of *Bhaishajya Kalpana,* and the word *Samhita* in its name authenticates the treatise. The entire book is divided into three parts- namely *Purva, Madhyama* and *Uttara-Khanda,* containing 32 chapters in total. *Purva Khanda* mainly deals with *Mana Paribhasha, Aushadh Sevan Kala*, *Rasapanchaka, Dravya Karma*, fundamental concepts of *Sharir Rachana* and *Sharir Kriya. Madhyama Khanda* contains contents related to *Bhaishajya Kalpana,* like *Swarasa, Kalka, Kwatha, Phanta, Churna, Gutika, Leha, Sneha* and *Sandhan Kalpana* preparation and *Dhatu Shodhana Marana* and *Rasakalpa* preparation. *Uttara Khanda* mainly deals with *Chikitsa* principles, like *Panchakarma, Gndusha Vidhi, Lepa, Kavala-dharana, Rakta-Mokshana* and treatment of *Netra-Roga.*[3] The main part under consideration in the present review is the *Madhyam Khanda* of *Sharangdhar Samhita*.

It is evident after review of various texts that, some of these drugs are highly praised in the literature for their high therapeutic values, versatile range of action, easy availability and preparatory methods. *Guduchi*, botanically identified as *Tinospora cordifolia* (Wild.) Miers. of family Menispermaceae is one such highly praised drug by almost all the scholars.[4] It is a large glabrous climber with succulent, corky, grooved stems, branches sending down slender pendulous fleshy roots. Leaves membranous, broadly ovate or orbicular, deeply heart shaped at the base. Tiny greenish yellow flowers occur in racemes. Male flower clusters in the axils of small subulate bracts, sepals yellow. Female flower usually solitary, similar to male, but sepals green. Carpels 1-2, stigma forked. Drupes, sessile; Seeds curved or half-moon shape, endospermic, cotyledons flattened, leaf like, radicle short.[5] The *Guduchi* vine grows wild and does not require much cultivation and can be easily propagated through stem cutting.[6]

Guduchi is known by various names like *Amruta, Chhinna, Chhinnaruha, Chakra, Chakralakshanika, Dhara, Somavalli* etc and so on. It is known by various vernacular names across India as *Gadancha, Giloe, Gulancha* in Bengal; *Ambarvel, Giroli* in Marathi; *Gado, Galo* in Gujarati; *Gurach, Giloe* in Hindi; *Amrytu* in Malayalam; *Shindil-Kodi* in Tamil, *Guluchi Lata* in Odia etc.[7] Present review attempts to provide a comprehensive account of use of *Guduchi* in various herbal formulations mentioned in *Madhyama Khanda* of *Sharangdhar Samhita* along with the safety profile of *Tinospora cordifolia* (Wild.) Miers.

Materials and Methods

Basic information regarding *Guduchi* was collected from various texts like *Nighantus, Sangraha Grantha* and *Samhitas. Sharangdhar Samhita* along with commentaries of *Deepika* by *Adhhamalla* and *Guddharth Deepika* by *Pandit Kashiram Vaidya* has been reviewed for inclusion of *Guduchi* in various herbal formulations mentioned in *Madhyama Khanda.* Available contemporary literature in digital as well as print format, regarding various studies conducted on *Tinospora cordifolia* (Wild.) Miers. Were screened for various activities evaluated experimentally as well as clinically.

Observations

Table 1: List of Samhita and *Sangraha Grantha* with reference of *Guduchi* (Arranged in alphabetical order).

1.	*Ashtang Hridaya*[8]
2.	*Ashtanga Sangraha*[9]
3.	*Basavarajiya*[10]
4.	*Bhaishajya Ratnavali*[11]

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5.	*Chakradatta*[12]
6.	*Charaka Samhita*[13]
7.	*Chikitsa Kalika*[14]
8.	*Gadanigraha*[15]
9.	*Sushrut Samhita*[16]
10.	*Vaidya Chintamani*[17]
11.	*Vangasena Samhita*[18]
12.	*Vrindamadhava*[19]

Table 2: Reference of *Guduchi* in various *Nighantus* (Lexicons) (Arranged in alphabetical order).

1.	*Abidhanamanjari*[20]
2.	*Abhidhanratnamala*[21]
3.	*Amarkosha*[22]
4.	*Ashtang Nighantu*[23]
5.	*Bhavprakasha Nighantu*[24]
6.	*Dhanvantari Nighantu*[25]
7.	*Dravyaguna Sangraha*[26]
8.	*Gunaratnamala*[27]
9.	*Haritakyadi Nighantu*[28]
10.	*Hridayadipaka Nighantu*[29]
11.	*Kaiyadeva Nighantu*[30]
12.	*Laghu Nighantu*[31]
13.	*Madanadi Nighantu*[32]
14.	*Madanapala Nighantu*[33]
15.	*Madhava Dravyaguna*[34]
16.	*Mahaushadha Nighantu*[35]
17.	*Nighantu Shesha*[36]
18.	*Paryayamuktavali*[37]
19.	*Paryayratnamala*[38]
20.	*Priya Nighantu*[39]
21.	*Raja Nighantu*[40]
22.	*Rajavallabha Nighantu*[41]
23.	*Sarasvati Nighantu*[42]
24.	*Saushruta Nighantu*[43]
25.	*Shabdachandrika*[44]
26.	*Shaligrama Nighantu*[45]
27.	*Shivakosha Nighantu*[46]
28.	*Siddhamantra Nighantu*[47]
29.	*Siddhasara Nighantu*[48]
30.	*Sodhala Nighantu*[49]

Table 3: *Rasapanchaka* (Pharmacodynamic properties) of *Guduchi* as per various texts.

Pharmacodynamics	*Sushrut Samhita*[50]	*Ashtang Hriday*[51]	*Bhavprakash Nighantu*[52]
Rasa	*Tikta*	*Tikta*	*Kashaya, Katu, Tikta*
Veerya	*Ushna*	*Shita*	*Ushna*
Vipaka	*Madhur*	*Katu*	*Madhur*
Guna	-	-	*Laghu*
Doshaghnata	*Vata Prashamana*	*Vatakara, Kapha Pittashamaka*	*Tridoshahar*

Table 4: Details of *Kalpa* containing *Guduchi* explained in *Madhyama Khanda* of *Sharangdhar Samhita* (Arranged in alphabetial order of name of *Kalpa*)[53]

SN	Name of *Kalpa*	*Adhyaya*	*Shloka*	Type of formulation	Number of contents	*Adhikara*
1.	*Abhayadi Kwath*	2	32-34	*Kwatha*	13	*Tridoshahar*
2.	*Amrita Ghrita*	9	44	*Sneha kalpana*	1	*Kushtha, Vatarakta*

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3.	*Amrita Swaras*	1	7	*Swaras*	1	*Prameha*
4.	*Amritashtaka*	2	24-25	*Kwatha*	8	*Pitta-Shleshma Jwarahar*
5.	*Amrutadi Kwath*	2	148	*Kwatha*	5	*Netraroga*
6.	*Amrutadi Kwatha*	2	133	*Kwatha*	3	*Vatarakta*
7.	*Bhunimbadi Kwath*	2	18-19	*Kwatha*	8	*Kaphaj Jwara*
8.	*Bruhanmajisthadi Kashaya*	2	137-142	*Kwatha*	45	*Kushtha*
9.	*Bruhat Guduchyadi Kwath*	2	59-60	*Kwatha*	13	*Jwaratisar*
10.	*Chaturbhadra Kwatha*	2	72	*Kwatha*	4	*Deepan Pachan*
11.	*Chyavanprash*	8	10-19	*Avaleha*	52	*Kshatakshaya*
12.	*Dashamoolarishtha*	10	77-92	*Sandhan Kalpana*	48	*Vataroga*
13.	*Devdarvyarishta*	10	53-59	*Sandhan Kalpana*	20 + Prakshepa	*Prameha*
14.	*Guduchi Hima*	4	6	*Hima*	1	*Jeerna jwara*
15.	*Guduchi Kwath+Pippali Churna*	2	44	*Kwatha*	2	*Jeerna jwara*
16.	*Guduchyadi Kwath*	2	9	*Kwatha*	3	*Vataj jwar*
17.	*Guduchyadi Kwatha*	2	56-57	*Kwatha*	6	*Jwaratisar*
18.	*Guduchyadi Kwatha*	2	8	*Kwatha*	5	*Jwara*
19.	*Hriberadi Kwath*	2	67-68	*Kwatha*	12	*Jwaratisar*
20.	*Kaishore Guggulu*	7	70-81	*Guggulu*	11	*Vatarakta*
21.	*Kamdev Ghrita*	9	27-37	*Sneha kalpana*	36	*Raktapitta*
22.	*Kashmaryadi Kwath*	2	11	*Kwatha*	5	*Vataj Jwar*
23.	*Kshudradi Kwath*	2	50-51	*Kwatha*	16	*Vishama Jwara*
24.	*Laghu Phala Ghrita*	9	87-90	*Sneha kalpana*	13	*Yoniroga*
25.	*Laghukshudradi Kwath*	2	21-22	*Kwatha*	4	*Kapha-Vataj Jwarahar*
26.	*Laghumanjishthadi Kwatha*	2	136	*Kwatha*	9	*Vatarakta, Pama*
27.	*Maharasnadi Yoga*	2	88-94	*Kwatha*	20	*Sarv Vataroga*
28.	*Mahatiktak Ghrita*	9	45-50	*Sneha Kalpana*	32	*Kushtha, Vatarakta*
29.	*Mustadi Kwath*	2	52-54	*Kwatha*	7	*Vishama Jwara*
30.	*Nagaradi Kwath*	2	61	*Kwatha*	5	*Jwaratisar*

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31.	*Nidigdhikadi Kwath*	2	46	*Kwatha*	3	*Jeerna Jwara*
32.	*Panchabhadra Kwath*	2	20	*Kwatha*	5	*Vatapittaj Jwara*
33.	*Panchatiktak Kwatha*	2	8,9	*Kwatha*	5	*Jwara*
34.	*Pathyadi Shadang*	2	143-145	*Kwatha*	6	*Shiroroga*
35.	*Patoladi Kwatha*	2	134	*Kwatha*	7	*Vatarakta*
36.	*Phalatrikadi Kwath*	2	75	*Kwatha*	8	*Kamala, Pandu*
37.	*Punarnavadi Kwath*	2	76-77	*Kwatha*	9	*Pandu, Shotha*
38.	*Punarnavadi Kwath*	2	120-121	*Kwatha*	7	*Shoth*
39.	*Punarnavadi Kwath*	2	118	*Kwatha*	9	*Shoth, Udara*
40.	*Rasnadi Kwatha*	2	123	*Kwatha*	6	*Antravriddhi*
41.	*Rasnapanchak kwatah*	2	85	*Kwatha*	5	*Saptadhatugata Vata*
42.	*Rasnasaptak Kwatha*	2	86-87	*Kwatha*	7	*Katyashrit vata*
43.	*Sanjivani vati*	7	18-21	*Vati*	10	*Tridoshaghna*
44.	*Sudarshan Churna*	6	26-36	*Churna*	43	*Jwara*
45.	*Vasadi Kwath*	2	78	*Kwatha*	3	*Kasa*
46.	*Vasadi Kwath*	2	146-147	*Kwatha*	17	*Netraroga*

RESULTS

Fig 1: Types of formulations including *Guduchi*

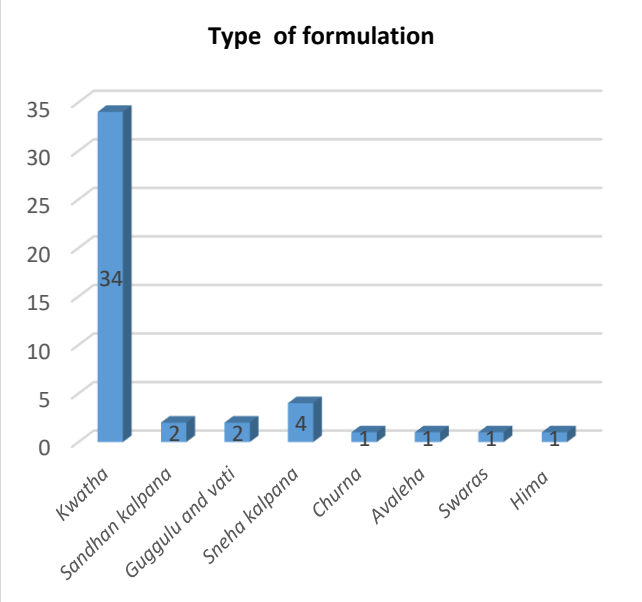

Fig 2: Number of contents in formulation containing *Guduchi*

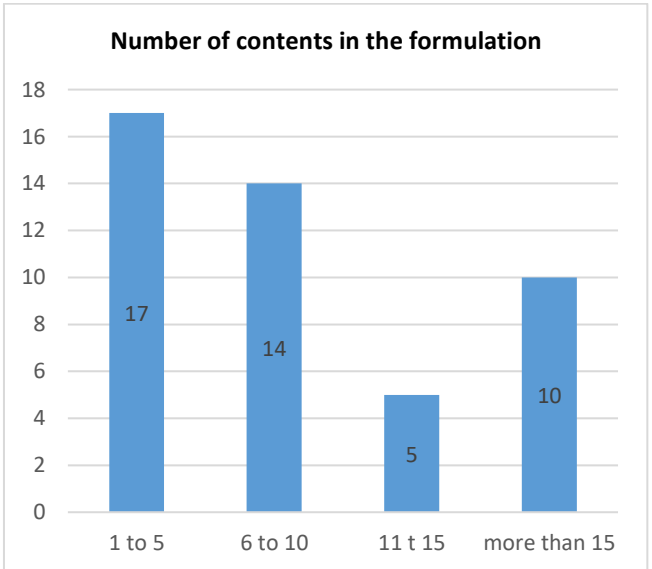

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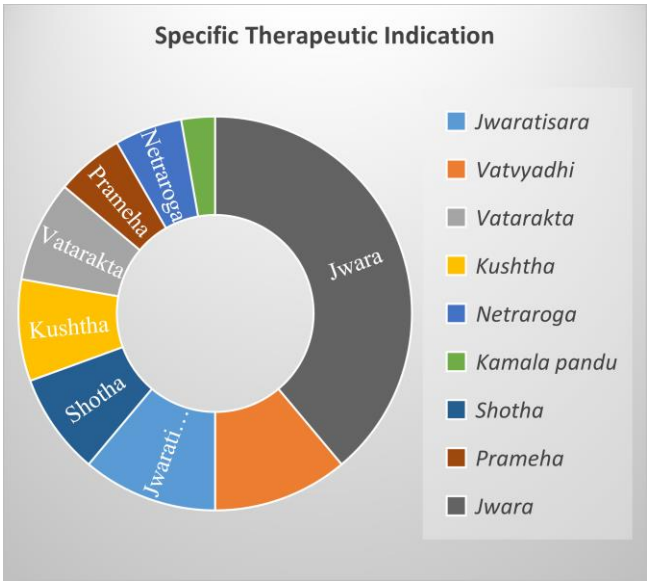
Fig no 3: Specific therapeutic indications of the formulations containing *Guduchi*



Scientific validation of reported activities

On review, it is noted that *Guduchi* is preferably indicated in the management of various systemic diseases and disorders. Recent experimental and clinical studies also prove the classical claims of use of *Guduchi*. Though Sharangdhar has mentioned only 3 formulations having *Guduchi* as a single drug, indicated in management of *Prameha, Kushtha* and *Jwara*. Otherwise, it is included various formulations indicated for varied pathologies. Details of traditional uses of *Guduchi* and reported scientific studies validating the long run uses are presented in following table (Table no 7 and Table no 8)-

SN	***Vyadhighnata* (as a single herb) according to Sharangdhar Samhita**	**Activity reported**
1.	*Prameha*	Experimental- Anti-diabetic,[54] Hypoglycemic activity,[55] Diabetic neuropathy and Gastropathy,[56] Diabetic retinopathy,[57] Cataract [58] Clinical- Management of DM type 2,[59] Hypoglycemic activity [60]
2	*Jwara*	Anti-pyretic [61,62] Anti-viral,[63] Anti-microbial[64]
3.	*Kushtha*	Anti leprotic activity[65] wound healing activity [66,67]

SN	***Vyadhighnata* (as a component of formulation) according to Sharangdhar Samhita**	**Activity reported**
1.	*Vatavyadhi*	Experimental studies- Parkinson's disease,[68] Anti-osteoporic activity,[69] Analgesic activity,[70] Anti-inflammatory [71] Clinical study- Management of gouty arthritis [72]
2.	*Kamala*	Obstructive jaundice,[73] Hepatoprotective activity,[74] reversal of liver loxicity[75]
3.	*Atisara*	Anti-diarrhoel activity [76]
4	*Annavaha Srotas Dushti*	Gastroprotecitve,[77] Anti-ulcer [78]
5.	*Netra-Roga*	Allergic conjunctivitis,[79] painful ophthalmic conditions [80]

Safety profile of *Tinospora cordifolia* Willd Miers.

Though any classical Ayurveda literature has not mentioned any adverse drug reaction after use of *Guduchi* in form of single herb or a formulation. But recently there are studies which are suggestive of Hepatotoxicity induced due to intake of *Guduchi* in various forms.[81] T. cordifolia, T. crispa, T. sinensis, T. smilacina, T. bakis, and T. sagittate are some species of genus Tinospora which are available throughout the world. They are quite resembling in some of the activities,[82] but also show drastic variation when toxicity is concerned.[83,84,85]But Ayuveda accepts *Tinospora cordifolia (Willd.) Miers*. as the authentic

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botanical source of *Guduchi*.[86] Experimental studies conducted on *Guduchi* which proves its safety are enlisted in following table-

Table 9: Safety studies conducted on *T.cordifolia* Willd Miers

SN	Title	Observation
1.	Hepatoprotective and immunomodulatory properties of Tinospora cordifolia in ccl4 intoxicated mature albino rats[87]	Treatment with T. cordifolia extract (100 mg/kg body weight for 15 days) in CCl4 intoxicated rats was found to protect the liver, as indicated by enzymelevel in serum. A significant reduction in serum levels of SGOT, SGPT, ALP, bilirubin were observed following T. cordifolia treatment during CCl4 intoxication. Treatment with T. cordifolia extract alsodeleted the immunosuppressive effect of CCl4, since a significant increment in the functional capacities of rat peritoneal macrophages (PMϕ) was observed following T. cordifolia treatment.
2.	Protective Role of Tinospora cordifolia against Lead-induced Hepatotoxicity [88]	Administration of aqueous stem extract (400 mg/kg body weight, orally) and aqueous leaves extract(400 mg/kg body weight, orally) along with the lead nitrate (5 mg/kg body weight, i.p. for 30 days) increased the activities of SOD and CAT and decreased the levels of AST, ALT, ALP, and ACP enzymes in mice. These biochemical observations were supplemented byhistopathology/histological examinations of liver section. Results of this study revealed that plant extract could afford protection against lead-induced hepatic damage.
3.	Phytoremedial effect of Tinospora cordifolia against arsenic induced toxicity in Charles Foster rats[89]	Twenty- four male Charles Foster rats (weighing 160–180 g) were randomly divided into two groups, where six rats were used as control group. Eighteen rats were orally treated with arsenic at the dose of 8 mg/kg body weight for 90 days daily and then further divided into three sub groups (n = 6 each). Sub group I—arsenic treated rats, were sacrificed after treatment; sub group II rats were used as arsenic control and the sub group III rats were administrated with T. cordifolia at the dose of 400 mg/kg body weight/day for 90 days. In histopathological study, the arsenic treated rats showed degenerative changes in the liver and kidney tissues such as lesions and vacuolizations in hepato-cytes and nephrocytes respectively. However, after the administration with T. cordifolia rats, there was considerably significant restoration in liver and kidney tissues. The entire study suggests that arsenic caused severe damage to the liver and kidney at haematological, biochemical and histopathological levels in rats.However, T. cordifolia played the vital role to combat the arsenic induced toxicity in rats.
4.	Protective Effects of Tinospora cordifolia on Hepatic and Gastrointestinal Toxicity Induced By Chronic and Moderate Alcoholism[90]	In alcoholics samples, a significant increase in the levels of gamma-glutamyl transferase, aspartate transaminase, alanine transaminase, Triglyceride, Cholesterol, HDL and LDL ($P < 0.05$) was observed but their level get downregulated after TCE intervention. Multivariate analysis of metabolites without missing values showed an increased excretion of 7-dehydrocholesterol, orotic acid, pyridoxine, lipoamide and niacin and TCE intervention depleted their levels ($P < 0.05$). In contrast, excretion of biotin, xanthine, vitamin D2 and 2-O-p-coumaroyltartronic acid (CA, an

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		internal marker of intestinal absorption) were observed to be decreased in alcoholic samples; however, TCE intervention restored the CA and biotin levels. Vitamin metabolism biomarkers, i.e. homocysteine and xanthurenic acid, were also normalized after TCE intervention.
5.	Tinospora cordifolia extract prevents cadmium-induced oxidative stress and hepatotoxicity in experimental rats[91]	Cd treated rats showed increased activities of the serum marker enzymes of liver damage such as AST and ALT along with increased levels of LPO and protein carbonyl content in liver tissues. Cd treatment also leads to decreased activities of endogenous antioxidants (SOD, CAT, GSH, GPx and GST), membrane ATPases (NaþKþATPase, Ca2þATPase and Mg2þKþATPase) and the tissue glycoprotein levels (hexose, fucose, hexosamine and sialic acid). Histological analysis revealed vacuolar degeneration of hepatocytes with focal necrosis upon Cd administration. TCME co-treatment restored the biochemical and histological alterations caused by Cd intoxication to near normal levels.

DISCUSSION

Sharangdhar Samhita is one of the most important treatises in the mediaeval period. It is considered as the apex disquisition mainly in the field of Ayurvedic pharmaco-therapeutics (*Bhaishajya Kalpana*) as it has compiled more than 500 formulations and divided it according to the method of preparation. It reflects clinical tradition of medieval period. In this period, lack of theoretical learning of Ayurveda is evident. The Samhitas were neglected, and formulation-based treatment started. Due to these factors, scholars like *Sharangdhara* were compelled to contribute their Samhitas, according to need of the time.[92] Though Sharangdhar Samhita has contributed to the fundamentals of Ayurveda by virtue of inclusion and elaboration of various concepts like *Nadi Pariksha, Deepan Pachandi Karma Varnan* etc, it is highly evident that the *Madhyam Khanda* is mainly inclined towards various formulations of herbal as well as herbomineral origin. Various formulations like *Sanjivani* vati, *Panchasama Churna*, *Akarkarabhadi Churna*, *Narayan Tail*, *Laghu Manjisthadi Kwath*a etc were innovative contributions of *Sharangdhar* which are still widely used by various Ayurveda practitioners across the globe. Thus, it is important for every physician to get well versed with the formulations given in the *Sharangdhar* Samhita, for attainment of goal of successful Ayurveda practice.

Guduchi, has been praised for its wide therapeutic activities by almost all the texts of Ayurveda. *Bhavprakash* has given origin of *Guduchi* from the period of Ramayana. From the review it is evident that, *Sharangdhar* has used *Guduchi* in 46 herbal formulations in *Madhyama Khanda* which is nearly equal to 10% of total formulations mentioned in the text. *Guduchi* as a single drug used only thrice in the form of *Swarasa* (expressed juice), Hima (cold water extract) and *Ghrita Kalpana* (medicated ghee). Out of the remaining formulations, 34 are *Kwath*as (decoctions), 3 are *Sneha Kalpanas* (medicated oil and ghee), *Guggulu* & *Vati* (Tablets) are two, and one churna (powder) i.e., Sudarshan *Churna* and one *Avaleha* i.e., *Chyavanprash* is included. Inclusion of *Guduchi* more in *Kwath*a preparation (74%) indicates the presence of more amounts of water soluble phytoconstituents in it. Also, from the conventional research it is clear that, most of the phytoconstituents of *Guduchi* like Palmatine, choline, tinocordifolin etc are better extracted in aqueous medium than any other solvent.[93]

Formulations containing *Guduchi* are mainly indicated in management of various types of *Jwara* i.e., Pyrexia of varied origin. This claim is well supported by the experimental and clinical studies conducted in the conventional approach. Other indications mainly include, *Vatavyadhi* (Neuromuscular disorders), *Pandu-Kamala* (Hepatic pathologies) and *Kushtha* (Skin disorders). These claims are well supported by the

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conventional experimental and clinical studies available. Experimental and clinical studies regarding therapeutic efficacy are lacking.

CONCLUSION

Multidrug therapy has eventually sidelined single drug therapeutics in recent times and only a few drugs have thrived to prove them effective when used alone, one such drug is *Guduchi*. Despite many claims on its safety and efficacy due to variety of species available to general public, it has been well appreciated in crucial period of Covid pandemic. This study reveals that *Guduchi* is an active ingredient of more than 10% of total formulation in Sharangadhara Samhitha making it evident that the drug posed no threat and was safe to use. The references also prove how efficacious was *Guduchi* in treating not alone Fever but also an array of symptoms associated with Diabetes Mellitus. its reference in 46 formulations under different *Adhikaras* prove multitarget approach of the drug and would conclude that it is rightly called "Amrita" nectar for helathy life.

REFERENCES

1. https://www.carakasamhitaonline.com/index.php?title=Apamarga_Tanduliya_Adhyaya Accessed on 12/2/2022
2. https://www.carakasamhitaonline.com/mediawiki-1.32.1/index.php?title=Dantidravanti_Kalpa_Adhyaya Accessed on 12/02/2022
3. Sharangdhar, Sharangdhar Samhita, Edited by Vidyasagar Pandit Parashuram Shastri, Chaukhamba Surbharati Prakashan, Varanasi, Reprint 2013.
4. Vaidya Thakur Balwant Singh, Glossary of vegetable drugs in Bruhattrayi,
5. Kirtikar KR, Basu BD. Indian medicinal plants. Vol. I. 2nd edition. Published by Lalit Mohan Basu, Allahabad. re-print-1975: p. 77.
6. Indian Biodiversity. Accessed on 12/2/2022. Available: https://indiabiodiversity.org/species/ show/231352
7. Indian Biodiversity. Accessed on 12/2/2022. Available: https://indiabiodiversity.org/species/ show/231352
8. Vaghbhatta. Astanga Hridaya. Atrideva Gupta. Editor, Chaukhambha Prakashan, Varanasi, Reprint 2021. Pg no. 264
9. Vaghbhatta. Astanga Sangraha. Atrideva Gupta, Editor, Vol. I & II, Chaukhamba Krishnadas Academy, Varanasi, Printed 2005
10. Vaidya Shree Basavaraja, Basavrajiyam. M.S. Krishnamurthy, editor Varanasi: Chaukhamba Orientalia; reprint - 2000.
11. Govindadasa. Bhaishajya Ratnavali. Ambikadatta Shashtri, editor. Varanasi: Chaukhamba Prakashan; reprint - 2011.
12. Tripathi I. editor. Chakradutta. Varanasi: Chaukhamba Sanskrit Bhawan, Varanasi; 2014
13. Charaka. Charaka Samhita. Pt.Rajeswara Datta Shastri, Editor. Sutrasthana 26/12, Chaukhambha Bharati Academy, Varanasi, Reprinted 2011
14. Tistacharya. Chikitsa kalika. Shri Vishal Tripathi, editor. Varanasi: Chaukhamba Orientalia; reprint 2000.
15. Shodhala. Gadanigraha, Vol. I, II & III. Indradeva Tripathi, editor. Chaukhamba Sanskrit Sanstana; 2012.
16. Sushruta. Sushruta Samhita. Kaviraj Ambika Dutta Shashtri, Editor, Vol I & II, Chaukhambha Sanskrit Sansthan, Varanasi, Reprint 2012
17. Shri Vallabhacharya, Vaidya Cintamani. Ram Nivas Shrma, editor. Delhi: Chaukhamba Snskrita Prakashan; 2000
18. Vangasena. Vangasen Samhita. Pt. Harihar Prashada Tripathi, editor. Varanasi: Chaukhambha Krishna Das Academy; 2009
19. Tiwari P, editor. Vrindhamadhava. Varanasi: Chaukhamba Vishwabharti; 2007.
20. Bhishagarya. Abhidhanamanjiri. Madanadi varga. (E – nighantu). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/ e-Nighantu.)
21. Abhidhanratnamala. Priyavat Sharma. Editor. Tikta Skandha. Chaukhamba Orientalia, Varanasi, 2008. p.18
22. Amarsinha, Amarakosha. Dwitiya khanda, Vanaushadhi varga, Editor. Commentary of 'Ratnaprabha'. Chaukhamba Surbharati Prakashan; Varanasi; 2008: p. 70
23. Vahata, Ashtanga Sangraha, Padmakadi Gana, Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/e- Nighantu.) Accessed on 10/20/2022
24. Chunekar KC, Bhavprakash Nighantu, Guduchyadi Varga, Chaukhamba Bharati Academy, Varanasi, 2013; Pg no.257
25. Dwivedi BK, Dhanvantari Nighantu, Guduchyadi varga, Chaukhamba Krishnadas Academy, Varanasi; 2008: p. 16.
26. Chakrapanidutta, Dravyaguna Sangraha. Shiva Das Sena. Umapati Mishra. Shaka Varga. Chaukhamba Subharti Prakashan. 2003: p. 91.
27. Bhavamishra. Gunaratnamala. Shakavarga. Chaukhambha Sanskrit Bhawan, Varanasi. 2006: p. 433
28. Haritakyadi Nighantu, Khemraj Shrikrishnadas Prakashan, Mumbai, 1926; pg no 84

ISSN: 2456-3110 **REVIEW ARTICLE** April 2022

29. Sharma PV, Hridayadeepaka Nighantu, Chaturpada varga,(Commentary of Bopadeva), Chaukhamba Amarbharati Prakashan,Varanasi, 1977, Pg no. 20
30. Sharma PV, Kaideva Nighantu. Aushadhi Varga, Chaukhamba Orientalia, Varanasi; 2006: p.5
31. Vyas K., Laghu Nighantu, Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http:// www.niimh.nic.in/ebooks/e-Nighantu.)
32. Chandranandan, Madanadi Nighantu, Panchadasha Gana,). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http:// www.niimh.nic.in/ebooks/e-Nighantu.)
33. Tripathi H, Madanpala Nighantu. Abhayadi varga, Chaukhamba Krishnadas Academy; Varanasi; 2009: p.8
34. Sharma PV, Madhava Dravyaguna. Shaka Varga, First edition, Chaukhamba Vidhyabhavan, Varanasi; 1973: 52
35. Singha PT. Aryadasa kumara. Mahaushadha nighantu, Bilvadi varga. Chaukhambha Bharati Acadamy; 2006: p. 110
36. Suri H. Nighantushesha. (E – nighantu). Lata kanda. Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/e- Nighantu.)
37. Hota NP and Padhi MM, Paryayamuktavali. Ministry of AYUSH, New Delhi; 2015: p.66
38. Madhavkara. Paryayaratnamala. (E – nighantu). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/eNighantu.)
39. Sharma PV. Priya Nighantu. Pippalyadi Varga. Chaukhamba Surbharti Prakashan, Varanasi; 2004: p. 60.
40. Tripathi I., Raja Nighantu, Guduchyadi varga, Chaukhamba Krishnadas Academy; Varanasi; 2010: p.29.
41. Rajavallabha. Rajavallabha Nighantu. Aushadha ashraya pariccheda (E-Nighantu). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http:// www.niimh.nic.in/ebooks/e-Nighantu.)
42. Saraswati Nighantu. Jayatilak JP. Edior. Lata varga. Chaukhamba Sanskrit Pratisthan; Delhi; 2006: Pg.65
43. Singh A. Sausruta Nighantu. Patoladi GaG„a. (E – nighantu) Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/e- Nighantu.)
44. Chakrapanidatta. Shabdachnadrika. (E – nighantu). Vrikshadivarga. Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/ e-Nighantu.)
45. Shaligram. Shaligrama NighaGmu. Guduchyadi varga. Khemaraja Shrikrishnadas Prakashana, Mumbai; Reprint 2011: p. 187
46. Shivdatta. Shivakosha, (E – nighantu). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http:// www.niimh.nic.in/ebooks/e-Nighantu.)
47. Keshava, Siddhamantra. (Commentary of Bopadeva), (E – nighantu). Kapha-vataghna Varga. Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http://www.niimh.nic.in/ebooks/e- Nighantu.)
48. Ravigupta. Siddhasaranighantu. (E – nighantu). Developed by NIIMH (National Institute of Indian Medical Heritage), Hyderabad for CCRAS (Central Council for Research in Ayurvedic Science) New Delhi: 2012. (Available from: http:/
49. /www.niimh.nic.in/ebooks/e-Nighantu.)
50. Shodhala. Shodhala Nighantu. Prof. Priya Vrat Sharma. Editor. Guduchyadi Varga. Oriental Institute Baroda; 1978: p.25
51. Sushruta. Sushruta Samhita. Kaviraj Ambika Dutta Shashtri, Editor, Vol I & II, Chaukhambha Sanskrit Sansthan, Varanasi, Reprint 2012
52. Vaghbhatta. Astanga Hridaya. Atrideva Gupta. Editor, Chaukhambha Prakashan, Varanasi, Reprint 2012; Pg no 264
53. Chunekar KC, Bhavaprakash Nighantu. Shakavarga, Chaukhamba Bharati Academy; Varanasi; reprint 2018: P. 663
54. Sharangdhar, Sharangdhar Samhita, edited by Vidyasagar Pandit Parashuram Shastri, Chaukhambha Surbharati Prakashana, Varanasi, Reprint 2013, Page no- 136-240
55. P. Sudha, S. Zinjarde, S.Y. Bhargava, A.R.Kumar, Potent á-amylase inhibitory activity of Indian ayurvedic medicinal plants, BMC Complement Altern. Med. 2011; 11:1–10.
56. Patel MB, Mishra S. Hypoglycemic activity of alkaloidal fraction of Tinospora cordifolia. Phytomedicine. 2011;18(12):1045-52.
57. Grover JK, Vats V, Rathi SS, Dawar R. Traditional Indian anti-diabetic plants attenuate progression of renal damage in streptozotocin induced diabetic mice. J Ethnopharmacol. 2001; 76: 233-238.
58. Agrawal SS, Naqvi S, Gupta SK, Srivastava S. Prevention and management of diabetic retinopathy in STZ diabetic rats by Tinospora cordifolia and its molecular mechanisms. Food Chem Toxicol. 2012; 50: 3126-3132

ISSN: 2456-3110 **REVIEW ARTICLE** April 2022

59. Rathi SS, Grover JK, Vikrant V, Biswas NR. Prevention of experimental diabetic cataract by Indian Ayurvedic plant extracts. Phytother Res. 2002; 16(8): 774-777
60. Sharma R, Shukla VJ, Ravishankar B, Prajapati PK. The effect of two different dosage forms of *Guduchi* i.e. Satva and Ghana WSR antihyperglycemic effect on Madhumeha (NIDDM) [dissertation]. Jamnagar: Gujarat Ayurveda University, IPGT and RA; 2012, p. 132- 133.
61. Vd. Bhoir Vijay, Vd. V. E. Gogate ,Vd. Bhoir Vedika. To Study the Efficacy of *Guduchi Kwath* with Oral Hypoglycemic Drugs in Madhumeha w.s.r. to Diabetic Mellitus. International Journal of Ayurvedic and Herbal Medicine. 2017; 7(5):2892–2902
62. Ashok BK, Ravishankar B, Prajapati PK, Bhat SD. Antipyretic activity of *Guduchi* Ghrita formulations in albino rats. Ayu. 2010 Jul;31(3):367.
63. Khan A. Evaluation of Anti-Inflammatory and Antipyretic Effect of Aqueous Extract of Tinospora Cordifolia in Rats.
64. Agar V, Kumar AH. Efficacy of natural compounds from Tinospora cordifolia against SARS-CoV-2 protease, surface glycoprotein and RNA polymerase. Virology. 2020 May 8:1-0.
65. V. Duraipandiyan, S. Ignacimuthu, K. Balakrishna, N.A. Aaharbi, Antimicrobial activity of Tinospora cordifolia: an ethnomedicinal plant, Asean J. Trad. Knowledge. 2012; 7(2): 59–65
66. Asthana JG, Jain S, Mishra A, Vijaykant MS. Evaluation of antileprotic herbal drug combinations and their combination with Dapsone. *Indian Drugs.* 2001;38:82–6. [Google Scholar]
67. Shanbhag T, Shenoy S, Rao MC. Wound healing profile of Tinospora cordifolia. Indian drugs. 2005 Apr;42(4):217-21.
68. Girish M, Priyadarshini K. Influence of Tinospora cordifolia on wound healing in albino rats. International Journal of Pharma & Bio Sciences. 2012;3(2):379-84.
69. H. Birla, S.N. Rai, S.S. Singh, W. Zahra, A. Rawat, N. Tiwari, R.K. Singh, A. Pathak, S.P. Singh, Tinospora cordifolia suppresses neuroinflammation in Parkinsonian mouse model, NeuroMolecular Med. 2019;21:42–53
70. P, Jarry H, Wuttke W, Pereira BM, Seidlova-Wuttke D. Evaluation of the antiosteoporotic potential of Tinospora cordifolia in female rats. Maturitas. 2008;59(4):329-38.
71. Goel B, Pathak N, Nim DK, Singh SK, Dixit RK, Chaurasia R. Clinical evaluation of analgesic activity of *Guduchi* (*Tinospora cordifolia*) using animal model. J Clin Diagn Res. JCDR. 2014;8(8):HC01-4
72. Patgiri B., Umretia BL., Prajapati PK., Shukla VJ. Anti-inflammatory activity of aqueous extract of Tinospora cordifolia. Ayurveda 2014; 35: 108- 10
73. Huded S, Gummadi SV, Sankh K, Asha HN, Ashwini HS, et al. Evaluation of *Guduchi* yoga in the management of *Vatarakta* (Gouty Arthritis): A clinical study. International Journal of Research of Ayurveda Pharmacy. 2013; 4: 688-692
74. Rege N, Bapat RD, Koti R, Desai NK, Dahanukar S. Immunotherapy with Tinospora cordifolia: a new lead in the management of obstructive jaundice. Indian Journal of Gastroenterology: Official Journal of the Indian Society of Gastroenterology. 1993 Jan 1;12(1):5-8.
75. Stanca MH, Nagy A, Toşa M, Vlad L. Hepatoprotective effects of orally administered melatonin and tinospora cordifolia in experimental jaundice. Chirurgia (Bucharest, Romania: 1990). 2011 Mar 1;106(2):205-10.
76. Bishayi B, Roychowdhury S, Ghosh S, Sengupta M. Hepatoprotective and immunomodulatory properties of Tinospora cordifolia in CCl4 intoxicated mature albino rats. The Journal of toxicological sciences. 2002;27(3):139-46.
77. Kaur M., Singh A, Kumar B. Comparative antidiarrhoel & antiulcer effect of aqueous & ethanolic extracts of Tinospora cordifolia in rats. International Journal of Pharmaceutical
78. Antonisamy P, Dhanasekaran M, Ignacimuthu S, Duraipandiyan V, Balthazar JD, Agastian P, et al. Gastroprotective effect of epoxy clerodane diterpene isolated from Tinospora cordifolia Miers (*Guduchi*) on indomethacin-induced gastric ulcer in rats. Phytomedicine. 2014;21(7):966-9
79. Kaur M., Singh A, Kumar B. Comparative antidiarrhoel & antiulcer effect of aqueous & ethanolic extracts of Tinospora cordifolia in rats. International Journal of Pharmaceutical Technology & Research. 2014; 5: 122-8.
80. Rishit Z, Chintan G, Vaibhav P, Balaraman R. Inhibitory effects of Tinospora cordifolia and Rubia cordifolia Linn. on egg albumin-induced experimental allergic conjunctivitis in rats. Advances in Traditional Medicine. 2009;9(1):58-66.
81. Srikanth N, Mangal AK, Lavekar GS. Scientific Exp () Sition On Medicinal Plants Indicated In Painful Ophthalmic Conditions: An Ayurvedic Pfiar~ Iacol () Gical Perspective.
82. Huang WT, Tu CY, Wang FY, Huang ST. Literature review of liver injury induced by Tinospora crispa associated with two cases of acute fulminant hepatitis. Complementary Therapies in Medicine. 2019 Feb 1;42:286-91.
83. Haque MA, Jantan I, Bukhari SN. Tinospora species: An overview of their modulating effects on the immune system. Journal of ethnopharmacology. 2017 Jul 31;207:67-85.
84. Langrand J, Regnault H, Cachet X, Bouzidi C, Villa AF, Serfaty L, Garnier R, Michel S. Toxic hepatitis induced by a herbal medicine: Tinospora crispa. Phytomedicine. 2014 Jul 1;21(8-9):1120-3.
85. Parveen A, Maqbool MT, Wang YH, Ali Z, Khan IA, Ashfaq MK. Evaluation of the hepatotoxic potential of Tinospora crispa and its isolated borapetosides B, C and F in a murine model. Planta Med. 2020 May;86(7):489-495. doi: 10.1055/a-1127-7503. Epub 2020 Mar 26. PMID: 32219777.

ISSN: 2456-3110 **REVIEW ARTICLE** April 2022

86. Kadir FA, Othman F, Abdulla MA, Hussan F, Hassandarvish P. Effect of Tinospora crispa on thioacetamide-induced liver cirrhosis in rats. Indian J Pharmacol. 2011 Feb;43(1):64-8. doi: 10.4103/0253-7613.75673. PMID: 21455425; PMCID: PMC3062125
87. Anonymous, Ayurvedic Pharmacopoeia of India, Part 1, Vol, Government Of India Ministry Of Health And Family Welfare Department Of Ayush
88. Bishayi B, Roychowdhury S, Ghosh S, Sengupta M. Hepatoprotective and immunomodulatory properties of Tinospora cordifolia in CCl4 intoxicated mature albino rats. The Journal of toxicological sciences. 2002;27(3):139-46.
89. Sharma V, Pandey D. Protective role of Tinospora cordifolia against lead-induced hepatotoxicity. Toxicology international. 2010 Jan;17(1):12.
90. Kumar V, Akhouri V, Singh SK, Kumar A. Phytoremedial effect of Tinospora cordifolia against arsenic induced toxicity in Charles Foster rats. BioMetals. 2020 Dec;33(6):379-96.
91. Sharma B, Dabur R. Protective effects of Tinospora cordifolia on hepatic and gastrointestinal toxicity induced by chronic and moderate alcoholism. Alcohol and Alcoholism. 2016 Jan 1;51(1):1-0.
92. Baskaran R, Priya LB, Kumar VS, Padma VV. Tinospora cordifolia extract prevents cadmium-induced oxidative stress and hepatotoxicity in experimental rats. Journal of Ayurveda and integrative medicine. 2018 Oct 1;9(4):252-7.
93. Singh SS, Pandey SC, Srivastava S, Gupta VS, Patro B, Ghosh AC. Chemistry and medicinal properties of *Tinospora Cordifolia* (*Guduchi*) *Indian J Pharmacol.* 2003;35:83–91.

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