



MANAGEMENT OF DENGUE FEVER BY NILAVEMBU KUDINEER AT RGGG HOSPITAL, CHENNAI- PUBLIC HEALTH INTERVENTION THROUGH SIDDHA SYSTEM OF MEDICINE

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ABSTRACT

Introduction: Dengue an important mosquito-borne, fatal flaviviral disease, seemingly increasing as a world health problem. Siddha an ancient Traditional system of India, practiced mostly in TamilNadu has its uniqueness for treating various diseases. Nilavembu Kudineer has the potential for Preventing and managing Dengue virus infection. The Health Department of Tamilnadu distributed Nilavembu Kudineer to Public during Dengue outbreaks.

Aim and Objective: The aim of the study is to investigate the outcome of dengue virus infection in patients, platelet count on administration of Siddha herbal formulation (Nilavembu kudineer).

Material and Methods: This was a prospective descriptive study conducted in inpatients admitted at Rajiv Gandhi Government General Hospital, Chennai, with suspected dengue fever during 23.02.2018 to 04.03.2018. Case series was conducted by the Government Siddha Medical College, Chennai, in collaboration with MMC Hospital. Clinically and serologically confirmed 37 cases of dengue fever who were willing to participate in the study were included. The phytochemical analysis of Nilavembu Kudineer was done.

Result: The outcome results suggest that administration of Nilavembu kudineer has satisfactory improvement in symptoms for dengue positive cases. The p value < .01 showed significant increase in platelet count due to the intake of Nilavembu Kudineer in patients. The phytochemical screening of Nilavembu kudineer showed positive result for all metabolites.

Conclusion: To combat the viral infections causing fever including dengue, Nilavembu kudineer can be used as a prophylactic measure to the public due to its antiviral properties.

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INTRODUCTION

Dengue, an acute febrile illness, is caused by infection with any of 4 related positive-sense, single-stranded RNA viruses of the genus *Flavivirus*, dengue viruses 1, 2, 3, or 4. Dengue virus is transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Aedes albopictus*. The every year dengue fever cases in India is numerous time higher than it is officially reported. As a measure to prevent and control dengue epidemic, the Tamil Nadu Health department distributed the traditional Siddha herbal concoction, *Nilavembu kudineer*, free of cost through mobile units and Government units to public⁹. Siddha system potential was valued when they are effectively utilised in public health out breaks in Tamilnadu.

Aim and Objective

The aim of the study is to investigate the outcome of dengue virus infection in patients and platelet count on administration of Siddha herbal formulation (Nilavembu kudineer)

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MATERIAL AND METHODS

This prospective descriptive study was conducted in inpatients admitted at Rajiv Gandhi Government General Hospital (RGGGH), Chennai, with suspected dengue fever. During 23.02.2018 to 04.03.2018, case series was conducted by the Government Siddha Medical college, Chennai in collaboration with the General medicine department of MMC Hospital. The clinical diagnosis of dengue virus infection was based on the WHO definitions. Apparent dengue fever is defined as acute febrile illness with two or more of the following manifestations like headache, retro-orbital pain, myalgia, arthralgia, rash, haemorrhagic manifestations, and leukopenia. Dengue fever is confirmed by laboratory criterion of serologically positive IgM, IgG anti Dengue antibodies (Confirmed by ELISA) or both. The patients who were suffered from fever and thrombocytopenia due to any chronic illness like aplastic anaemia, acute leukaemia, and chronic liver disease were excluded from the study. Patients were administered Nilavembu kudineer 30 ml twice a day before food along with allopathic drugs. Patients treated symptomatically with antipyretics, antibiotics and analgesics were indicated. Clinical data was recorded that included

symptoms, signs and laboratory investigations. Patients were followed with Complete Blood Count daily until they were in the normal range.

Formulation of Nilavembu kudineer

Nilavembu kudineer (Research pharmacopeia of Siddha Medicine) is a polyherbal mixture contains equal quantity of Nilavembu (*Andrographis paniculata*), Vilamichuver (*Plectranthus amboinicus*), Chukku (*Zingiber officinale*), Milagu (*Piper nigrum*), koraikizhangu (*Cyperus rotundus*), Peipudal (*Tricosanthes cucumerina*), Vettiver (*Vetiveria zizanioides*), Santhanam (*Santalum album*), and Parpadagam (*Mollugo cerviana*). It is indicated for fever in the text. In-vitro studies proved its efficacy against Dengue virus⁵ besides having anti pyretic, analgesic, and anti-inflammatory properties⁴. The Siddha literature Agasthiyar sura nool 300 defines Pitha suram to manifest the tendency of Haemorrhagic fever, hence Dengue fever was classified under this. The phytochemical screening of Nilavembu kudineer was performed for alkaloids, tannin, anthocynin, flavanoids, saponins, terpenoids and glycosides.

RESULT AND DISCUSSION

Effect of Nilavembu Kudineer on Dengue Fever

A total of 78 febrile patients from various wards admitted in MMC Hospital were tested for Dengue fever during the study period. Among them 48 found positive for Dengue virus. In that 37 patients satisfied the inclusion criteria, and the remaining excluded. They were administered 30 ml of Nilavembu Kudineer two times per day before food.

Table 1 Demographic characteristics of the patient

Patient Characteristic	Number (N)	%
Number of patients included	37	77
Gender		
Male	20	54
Female	17	46
Age(in years)		
10-20	15	41
21-30	03	8
31-40	09	24
41-50	07	19
51-60	03	8
Region		
Rural	23	62
Urban	14	38
Religion		
Hindu	25	68
Christian	10	27
Muslim	02	05
Marital status		
Married	21	57
Unmarried	16	43

Inference

Among the study population the gender distribution was 54% Male, and 46% Female. Males predominant female comparatively. When the Age group was assessed 10-20 years were affected 41% followed by 31-40 years 24% which denotes young adults affected most in this study. The Region wise distribution of the study population found that rural 62%, and urban 38%. Most of the study patients belonged to Hindu religion 68%, followed by Christian 27%, and Muslim 05%. Furthermore, among the study population married were 57% and unmarried 43%. The clinical features was assessed and

found that all patients suffered from fever, degree was variable ranging from low to high grade. Headache, Vomiting, abdominal pain was the most common symptom followed by Myalgia in 87% of patients. Haemorrhagic manifestations in the form of gum bleed was found in 5% of patients. No platelet transfusion or death encountered in the study population. After 3 days administration of Nilavembu kudineer there was a satisfactory improvement in the symptoms of dengue positive cases.

Statistical Analysis

Data was analyzed using statistical tools by SPSS 23 Software. To know the significant increase in platelet count in 37 dengue positive patients before and after the administration of Nilavembu kudineer paired t-test is used to understand the difference in the raise of platelet count.

Table 2

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre platelet count	85541.00	37	28667.481	4712.905
	Post platelet count	138513.51	37	29752.331	4891.253

Note: There is an increase of nearly 52972.514 (Difference in Mean Value) in the Platelet Count.

Table 3

		Paired Samples Correlations		
		N	Correlation	Sig.
Pair 1	Pre Platelet Count & Post Platelet Count	37	.826	.000*

Note:

*Correlation is significant at 1% level. Since the p-value is less than .01, it is concluded that there is a significant increase in the platelet count from pre to post platelet count due to the intake of Nilavembu Kudineer in patients.

Table 4 Duration of Stay of the Patients

	N	Minimum	Maximum	Mean	Std. Deviation
DURATION OF STAY	37	3	9	4.27	1.347
Valid N (list wise)	37				

From the table, it can be understood that, patients taken for this study had a minimum stay of 3 days and a maximum of 9 days in the hospital.

Table 5 Phytochemical screening of Nilavembu kudineer decoction

Sl. No.	Phytochemical Constituents	Observation	Nilavembu kudineer decoction
1.	Alkaloids	Orange / red precipitate	+
	-Dragendorff's test		
2.	-Mayers test	Cream pie ppt	+
	Flavonoids	Intense yellow colour	+
3.	-Alkalai Reagent		
	-Lead acetate test	Precipitate formed	+
4.	Glycosides	Pink colour (Ammonia layers)	-
	-Keller-Killiani test		
5.	Tannin	Blue-black colour	+
	-FeCl ₃ test		
6.	Saponins	Foam	+
	-Frothing test		
7.	Terpenoids	Reddish brown colour ring formed in interface	+
	-Salkowski test		
8.	Polyphenols	Raddish blue	+
	-Ferrozine test		
8.	Anthocyanin	Pink color in ammonia layer	+
	-Ammonia test		

+ Positive result; - Negative result

We observed that an average stay of 4 days (Mean=4.27, S.D=1.347) is required for the patients to have a marginal increase of 52972.514 platelet count after an adequate oral administration of Nilavembu Kudineer in this study.

Phytochemical screening of Nilavembu kudineer decoction

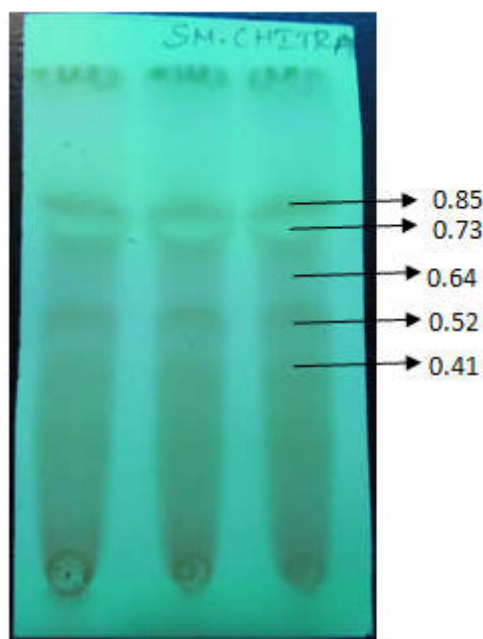
The phytochemical screening of Nilavembu kudineer decoction studied presently showed the presence of alkaloids, flavonoids, phenol, Terpenoids, glycosides and saponin, and absence of glycosides and tannin.

Thin layer chromatography profile of Nilavembu kudineer decoction

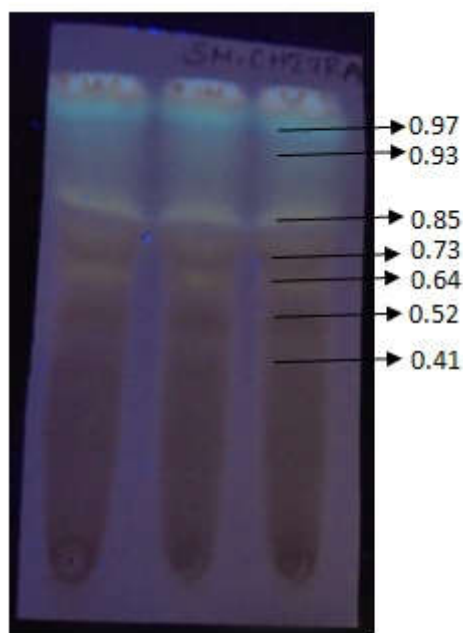
The Nilavembu kudineer decoction was loaded on Pre-coated TLC plates (60 F₂ 54 Merck) and developed with a solvent system of petroleum ether, chloroform and methanol in the ratio of 1:0.5:0.1 were efficient to extract the Nilavembu kudineer decoction compounds and it is used for further studies. The developed plate was viewed under UV 240nm and 360nm (Table-6 and Fig-1).

Table 6 Thin layer chromatography profile of Nilavembu kudineer decoction

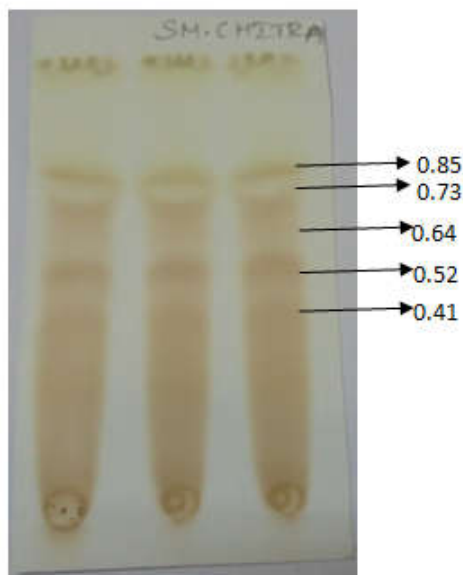
S.No	Decoction of Nilavembu kudineer		
	UV 240 nm Rf value	UV 360 nm Rf value	Visible Rf value
1.	-	0.97	-
2.	-	0.93	-
2.	0.85	0.85	0.85
4.	0.73	0.73	0.73
5.	0.64	0.64	0.64
6.	0.52	0.52	0.52
7.	0.41	0.41	0.41



TLC under UV 360nm



TLC under UV 240nm



TLC under normal light

Fig 1 Thin layer chromatography profile of Nilavembu kudineer decoction

CONCLUSION

The study conclude that administration of poly herbal formulation Nilavembu kudineer showed satisfactory improvement for the symptoms of Dengue fever. Since the p value is < .01 there is a significant increase in the number of platelet and we observed an average stay of 4 days (Mean=4.27, S.D=1.347) is required for the patients to have a marginal increase of 52972.514 platelet count after an adequate oral administration of Nilavembu Kudineer in this study. The phytochemical screening of Nilavembu kudineer showed positive result for all metabolites. Hence, to combat the viral infections causing fever including dengue, Nilavembu kudineer can be used as a prophylactic measure to the public due to its antiviral properties. Moreover, in dengue outbreaks

Nilavembu Kudineer intervention was helpful by which a large number of sufferers were benefited.

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