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Indigenous Composit in Management of Dengue Fever

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Abstract: *Dengue , a vector born viral fever caused by various strain of Flavivirus and transmitted by female Aedes aegyptii,still remain a therapeutically challenged disease in spite of various anti viral drugs (ribavirin, glycyrrhizin and 6-azauridine)are under evaluation, its severity is more pronounced in immuno- compromised patients ,also p[resents with Dengue fever sequel as Dengu hemorrhagic fever and Dengue hemorrhagic shock , a dreaded presentation among children <10 yrs .*

Adequate hydration, multivitamin supplementation, Acetaminophen (Paracetamol) are provided and prescribed ther apeutics, Present study of indigenous herbal composite containing leaves of Carica papaya,Ocimum sanctum, Tinospora cord folia in Dengu fever and with Blumea lacera in equal parts in Dengue hemorrhagic fever and Shock proves worth in alleviating fever, bodyache, headache, nausea, vomiting ,abdominal pain ,progressive increase in platelet count ,checking hemorrhage promptly and reverting all the altered hematological, hepatic and renal parameters in 10 days without any drug adversity with 100% compliance.

1. INTRODUCTION

Dengue , a vector borne viral fever also commonly known as break bone fever, is caused by various strain of Flavi virus (3,4) (DEN I,DEN II,DEN III, DEN IV) transmitted by a female mosquito Aedes aegyptii (2), is increasing worldwide approximately affect 50 million people each year and more than 2.5 billion people being at risk of infection(1).

Surge in Dengue cases are considered due to –

- Increased urbanization resulting in increased mosquito harbor
- Migrant population transmitting disease
- Environmental changes providing survival of mosquito in water.

World Health Organization categorized this viral fever as-

- Undifferentiated fever,
- Dengue fever,
- Dengue hemorrhagic fever. (a common presentation of children below 10 yrs)

Dengue hemorrhagic fever is subdivided further into grades I–IV.

Grade I : the presence only of easy bruising or a positive tourniquet test in someone with fever,

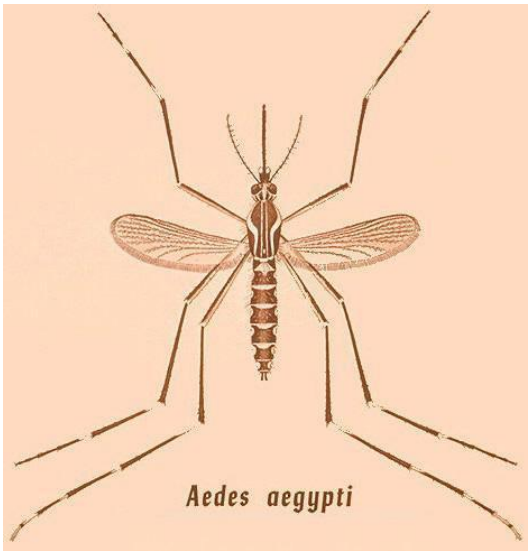
Grade II: the presence of spontaneous bleeding into the skin and elsewhere,

Grade III: the clinical evidence of shock, and

Grade IV: shock so severe that blood pressure and pulse cannot be detected.

Grades III and IV are referred to as "dengue shock syndrome

2. MECHANISM



When a mosquito carrying dengue virus bites a person, the virus enters the skin together with the mosquito's saliva. It binds to and enters white blood cells, and reproduces inside the cells while they move throughout the body. The white blood cells respond by producing a number of signaling proteins, such as cytokines and interferons, which are responsible for many of the symptoms, such as the fever, the flu-like symptoms and the severe pains. In severe infection, the virus production inside the body is greatly increased, and many more organs (such as the liver and the bone marrow) can be affected. Fluid from the bloodstream leaks through the wall of small blood vessels into body cavities due to capillary permeability. As a result, less blood circulates in the blood vessels, and the blood pressure becomes so low that it cannot supply sufficient blood to vital organs. Furthermore, dysfunction of the bone marrow due to infection of the stromal cells leads to reduced numbers of platelets, which are necessary for effective blood clotting; this increases the risk of bleeding, the other major complication of dengue fever.

Incubation period	4-10 days
Symptoms last fopr	2-7 days
Warning sign appear after	3-7 days
Lethal stage	Appear after 24 hrs of appearance of warning sign

Un availability of proper therapeutics ,usually patients were advised conservative management with restriction of commonly used analgesics Aspirin, adequate oral rehydration, multivitamin supplement, some antiviral drugs still need adequate clinical evaluation ,thus considering the antiviral effect of some indigenous herbs, a composit constituting Carica papaya (leaf)(5,6,7), Ocimum sanctum (leaf),Tinospora cordifolia (leaf) in dengue fever and Composit constituting Carica papaya (leaf),Ocimum sanctum(leaf), Tinospora cordifolia (leaf) and Blumea lacera (leaf) in Dengue haemorrhagic fever been evaluated for its efficacy and safety margin.

3. MATERIAL & METHODS

55 patients of fever attending at RA. Hospital & Research Centre coming from various working places having suspicion or diagnosed as Dengue fever on the basis of following index –

- High fever
- Severe joint pain and muscular pain
- Headache
- Rash

Or Dengue triad i.e. - Fever, Rashes and Headache while Dengue Hemorrhagic fever on the basis of presence of –

- High fever,
- Abdominal pain,

- Hemorrhage
- Circulatory collapse (or Shock)

Selected patients were evaluated and classified as per index of diagnosis.

Each selected patients were evaluated for tourniquet test, pulse pressure, WBC count,platelet count , Hepatic profile(Serum bilirubin, SGOT, SGPT, Alkaline phosphatase),Renal profile(Blood urea, Serum creatinine,),Urine (RBC, Albumin, Urobilinogen), immunological test for Dengue to ascertain the diagnosis and disease or drug related adversity..

The tourniquet test, which is particularly useful in settings where no laboratory investigations are readily available, involves the application of a blood pressure cuff at between the diastolic and systolic pressure for five minutes, followed by the counting of any petechial hemorrhages; a higher number makes a diagnosis of dengue more likely with the cut off being more than 10 to 20 per 1 inch^2 (6.25 cm^2).

Pulse pressure drop to $\leq$ 20mm Hg with peripheral vascular collapse suggest Dengue shock Syndrome while delayed capillary refill, rapid heart rate or cold extremities also suggest peripheral vascular failure

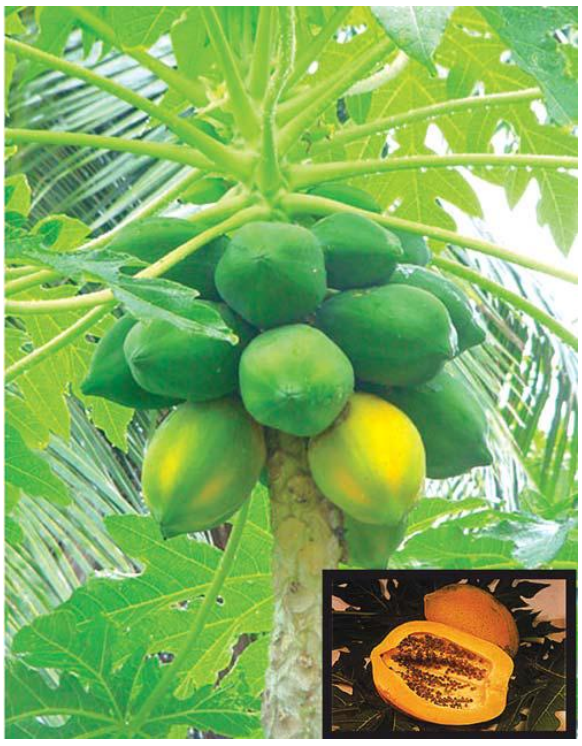
In addition to adequate hydration (oral or intravenous 0.9% normal saline solution at a rate of 20 ml/kg/h in the first 2 h, followed by 10 ml/kg/h for 6 h, then the rate can be adjusted according to the status of the patient in the following 16 h Water and electrolyte status should be maintained during treatment to avoid under and over administration of fluid.)

Each patient was advocated:

Dengue fever: Compound decoction of *Carica papaya* (leaf), *Ocimum sanctum* (leaf) and *Tinospora cordifolia* (leaf) taken in equal part and boiled in 10 times water to make its half . Administered in dose of 10 ml morning and evening in adult and 5 ml morning and evening in children ,2.5 ml morning and evening in infants.

Dengue hemorrhagic fever: Compound decoction of *Carica papaya* (leaf),*Ocimum sanctum* (leaf), *Tinospora cordifolia* (leaf) and *Blumea lacera* (leaf) taken in equal part and boiled in 10 times water to make its half . Administered in dose of 10 ml morning and evening in adult and 5 ml morning and evening in children, 2.5 ml morning and evening in infant.

3.1. Carica Papaya



Arabi:	Aanabahehundi
Bengali:	Panpe, Papia, Papeya, Paupe, Pepia
English:	Melon Tree, Papou
French:	Commer, Papayer
Germany:	Melonenbaum
Gujarati:	Papai, Paputa
Hindi:	Arandkharbuja, Arandkakadi, Papita, Papaiya,Pepiya, Popaiya
Kannad:	Pappangaye, Peragi, Piranji
Mallyalam:	Kappalam, Kormmosa, Pappayam,
Marathi:	Papaya, Papiya, Popaya
Persian:	Ambanindi
Punjabi:	Arand Kharbuz, Kharbusa
Sanskirt:	Batkumbh, Chirbhita, Erandchirbhita,Madhukarkati, Nalikadala
Sindhi:	Chibudo, Katha, Paputa,
Tamil:	Pappali, Parangi, Poppayi,
Telugu:	Bappayi, Bobbasi, Madananabu,Madhurnakamu
Urdu:	Erandkharbhujah

3.2. Ocimum Sanctum

Sanskrit	Bahumanjari, Bharati, Bringa, Deodundumi,Divya, Gramya, Krishnaemul, Sulbha, Surabha, Tulsi, Vishnupriya,
Hindi	Baranda, Tulas, Tulsi
Marathi	Chojharr, Tulasi
Gujarati	Tulasi
Bengali	Jiyal, Jiyli, Krishna, Tulasi
Sinhali	Maduru-tulla
Tamil	Tulasi
Telugu	Gaggera-Chettu, Gumpina, KrishnaTulsi,Oddhi
Mallyalam	Shiva Tulsi
Canada	Kari-tulasi
Duke	Tulashi
Burma	Lun
Malaya	Krishna Tulsi
French	Basilic Saint
English	Holy Basil, Mosquito plant of South Africa
Latin Syn	Ocimum Hirsutam, Ocimum Tomentosum, Ocimum Viridi

3.3. Tinospora Cordifolia

Sanskrit	Amrita, Chhinaruha, Guduchi, Madhuprani, Somavalli
Hindi	Giloi, Gudich, Guracti, Gulanche, Gurach
Marathi	Gado, Galo, Ghr – bel, Gulwail, Gharol,Gula – Veti, Guloe
Gujarati	Giloi
Punjabi	Garham, Gilo – Zularich, Gilo, Palo,Sat – Gilo (extract)
Bengali	Gadaucha, Gulaulia, Guroch, Palo
Tamil	Shindil – kodi, Shindil – Shak – Karai (extract)
Telugu	Guluchi, Guricha, Manupala, Tippalige,Tippa – tige – sattu (extract) Tippatege – Veru(root)
Latin Syn	Minispermum Cordifolium

3.4. Blumea Lacera

Common name	Kakronda, Blumea
Hindi	Jangli Muli Kakronda
Marathi	Bhamurda, Burando
Tami	Kattumullangi, Narakkarandai
Telugu	Advimulangi, Karupogaku
Bengali	Kukurmuta, Kukursunga
Gujarati	Kolhar, Pilo Kapurio
Sanskrit	Kukkuradru, Kukundara, Mridu chhada, Tamrachuda

During the therapy each patients were evaluated for clinical improvement and platelet count on every alternate day while hepatic profile and renal profile was repeated after 5 days and 10^{th} days of therapy.

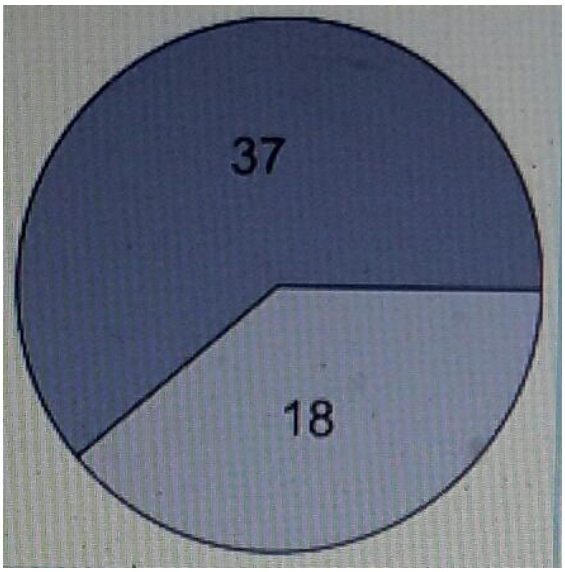
4. OBSERVATIONS

Selected patients positive for Dengue antigen were of age group m15-45 yrs with male female composition of 3:2 and came from different working habitate their duration of illness varies from 5-10 days. Out of 55 cases 10 cases were of various grades Dengue hemorrhagic fever (Table I,II,III)

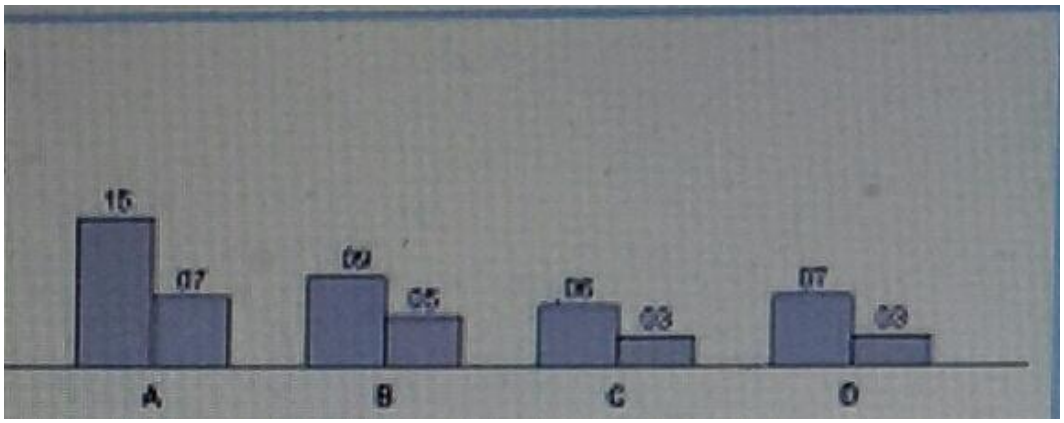
TableI. *Shows age and sex wise distribution of patients*

Age group (in yrs)	Number of patients		
	Male	**Female**	**Total**
10-15	02		02
15-20	01	02	03
20-25	05	02	07
25-30	07	04	11
30-35	06	02	08
35-40	08	05	13
40-45	04	01	05
45-50	04	02	06
Total	**37**	**18**	**55**

TableII. *Pie diagram showing sex wise composition*



TableIII. *Shows distribution of patients as per their working habitat*



A: Delhi, B: Gurgaon, C: Ahmedabad, D: Surat Male: Female:

Common presentation was fever with chills and rigor ,rash and hemorrhages though presentations like nausea, vomiting, pain in abdomen and lassitude was common (Table IV)

Pre treatment biological status of hematological and hepatic parameters were altered while cases of Dengue hemorrhagic fever shows altered renal parameters also. In all cases platelet count was markedly declined (Table V)

TableIV. *Showing Common presentation among the selected patients*

Presenting features	Number of patients
Sudden high fever	55
Intense headache	55
Body ache	55
Rash	55
General debility	55
Nausea	35
Vomiting	17
Abdominal pain	11
Vertigo	45
Haemoptysis	02
Hematuria	04
Malena	02
Epistaxis	03
Pain behind the eye	55

TableV. *Distribution of patients as per their disease status*

Dengue fever	45
Dengue Hemorrhagic fever	10
Grade I	04
Grade II	04
Grade III	02

Post therapy follow up and hemato, hepato-renal parameters shows within the normal in all the cases (Dengue fever and Dengue hemorrhagic fever). In addition all the cases on the compound decoction shows progressive rise in platelet counts and recovery from the illnesses, No adverse effect or any un eventual outcome was noted.

5. DISCUSSION

The present scenario of treatment of Dengue and Dengue hemorrhagic fever is purely conservative and non-secured. In the context the clinical response observed with the indigenous herb composite in terms of marked progressive rise in platelet count, relief of presentation without any untoward effects and complete reversal of altered hematological, hepatic and renal function with 100% compliance can be explained on the basis of potent active ingredients of the constituting herbs i.e-

Carica papaya leaves exhibits immune modulatory, anti inflammatory and anti oxidant, which also mreduces lipid perioxidation due to papain, chymopapain, cystatin, L-tocopherol, ascorbic acid, flavonoids, cyanogenic glucosides and glucosinolates.

In addition also acts a viricidal due to 1- β-D-ribofuranosyl-3-ethynyl-[1,2,4]triazole (ETAR) and 1-β-Dribofuranosyl-4-ethynyl[1,3] imidazole (IM18), also significantly reduced replication of dengue virus serotype 2 (DENV-2)

Antiviral property of active ingredients Limonene,4-terpineol, Camphene, Nerol, and Eugenol of Ocimum sanctum, tinospoprinbisacarbolactine, columbin, cordifol helps eradicate causative flavivirus and Berberin, palmarin activates hemopoetic system and promote platelet formation duly activated by hencontane of Blumea lacera and carpinine of Carica papaya .

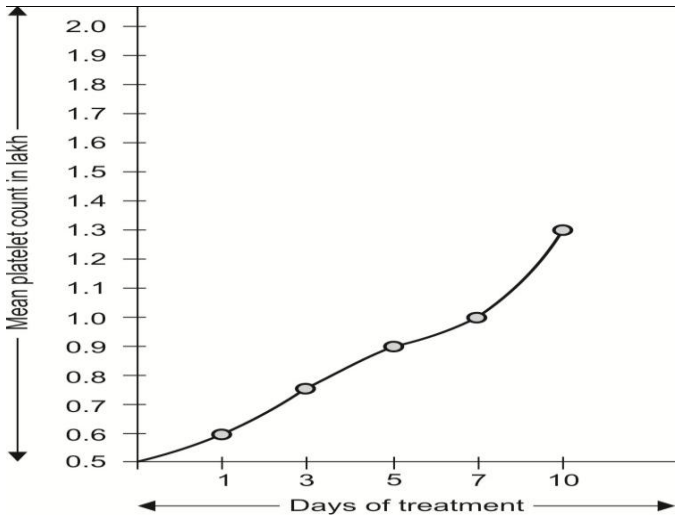
Antipyretic effect of chymopapain of Carica papaya, Limonene of Ocimum sanctum, syringin, jatrorrhizine, heptacosanol of Tinospora cordifolia and Ferinone,comferyl of Blumea lacera alleviate fever and bodyach.

Thus in short combinely acting as antiviral, antioxidant, leucotropic, thrombocytogenic, haemo stimulant, promote defense potential, progressive increase in platelet count, anti pyretic and anti inflammatory effect relieve both fever, musculo skeletal pain, headache and checks subcutaneous micro bleeding (8,9).

TableVI. *Shows base level hemato, hepatic and renal parameters*

Parameters	Number of Patients
Hematological :	
Hemoglobin	
< 8gm %	10
8-9gm%	35
9-10gm%	10
Platelet count:	
<60,000	10
60,000-65,000	15
65,000-70,000	17
70,000-75,000	07
75,000-80,000	06
WBC count:	
<5000	10
>5000	45
Hepatic index:	
Serum bilirubin	
<1mg	-
>1mg	55
SGOT	
<40 IU	-
>40 IU	55
SGPT	
<40IU	-
>40 IU	55
Alkaline phosphatase	
<140	55
>140	-
Renal Index:	
Blood urea	
< 30mg%	41
>30mg%	14
Serum creatinine	
<1.5mg	48
>1.5mg	07
Urine:	
RBC +ve	44
-ve	11
Albumin +ve	47
-ve	08

TableVII. *Graph showing effect of therapy on platelet count*



6. CONCLUSION

Indigenous herb composite compound decoction of equal parts of Carica papaya (leaf), Ocimum sanctum (leaf), Tinospora cordifolia (leaf) in prescribed dose schedule in Dengue fever and Carica papaya (leaf), Ocimum sanctum (leaf), Tinospora cordifolia (leaf) and Blumea lacera (leaf) in Dengue hemorrhagic fever alleviate the clinical presentation and insure progressive rise in platelet count .

REFERENCES

[1] Bhatt S, Gething PW, Brady OJ, Messina JP, Farlow AW, Moyes CL et.al. The global distribution and burden of dengue. Nature; 496:504-507.

[2] [2] Brady OJ, Gething PW, Bhatt S, Messina JP, Brownstein JS, Hoen AG et al. Refining the global spatial limits of dengue virus transmission by evidence-based consensus. PLoS Negl Trop Dis. 2012; 6:e1760. doi:10.1371/journal.pntd.0001760.

[3] Naides SJ. Arthropod-borne viruses causing fever and rash syndromes. In: Goldman L, Ausiello D, eds.*Goldman's Cecil Medicine*

[4] Vaughn DW, Barrett A, Solomon T. Flaviviruses (yellow fever, dengue, dengue hemorrhagic fever, Japanese encephalitis, West Nile encephalitis, St. Louis encephalitis, tick-borne encephalitis). In: Mandell GL, Bennett JE, Dolin R, eds. *Principles and Practice of Infectious Diseases*

[5] Karishna KL, Paridhavi M, Patel JA. Review on nutritional, medicinal and pharmacological properties of papaya (*Carica papaya* Linn.) Nat Prod Radiance. 2008;7:364–373.

[6] Dominguez de Maria P, Sinisterra JV, Tsai SW, Alcantara AR. *Carica papaya* lipase (CPL): An emerging and versatile biocatalyst. Biotechnol Advances. 2006;24:493–499

[7] Otsuki N, Dang NH, Kumagai E, Kondo A, Iwata S, Morimoto C. Aqueous extract of Carica papaya leaves exhibits anti-tumor activity and immunomodulatory effects. J Ethnopharmacol. 2010 Feb 17;127(3):760-7

[8] Salutary effects of Carica papaya leaf extract in dengue fever patients – a pilot study S Hettige1. Journal of Family Physician of Sri Lanka, 2008, 29, 17-19(1)

[9] Sarala N, Paknikar S. Papaya Extract to Treat Dengue: A Novel Therapeutic Option? Annals of Medical and Health Sciences Research. 2014;4(3):320-324. doi:10.4103/2141-9248.133452.

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Dr. Avinash Shankar, a postgraduate in internal medicine and super specialized in endocrinology and Metabolism from k AIIMS Delhi, LLB (Magadh University), MBA(HA) Alaggapa university and PhD in Ayurveda from Mumbai University, a dedicated clinician, published more than 200 papers in original in various national and international medical journal in various aspect of medical sciences, presented papers at various national and international medical conferences in India and abroad, Chaired various national and International medical conferences of various disciplines, editor and editorial board members of various national and International journal of repute, authors of various medical literature and books , conceptualized CME program for grass root health workers for better implementation of health care at rural level, Devised modern therapeutic measures for various dreaded disease and drug formulation for medicare and ensure quality health care with dedication, determination and dignity.

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