

## PAPAYA SEEDS JUICE EXTRACT USED FOR REGENERATION OF PLATELETS IN THE BLOOD

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### ARTICLE INFO

### ABSTRACT

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Paw-paw fruit tree (*C. paw-paw* fruit) is usually called as paw-paw and it belongs to the paw-paw fruit family. It has been successfully employed as a folk medicine for several years for the treatment of dengue infections with hemorrhagic manifestations. Since previous couple of decades paw-paw fruit is thought for its food and nutritional values throughout the globe. Currently, foliole of *C. paw-paw* fruit possess medicinal properties and are widely utilized in traditional medicines.

This exploration focal point on the different properties of paw-paw fruit as a multi-faceted plant. This study was conducted to gauge the therapeutic benefits of *C. paw-paw* fruit foliole fluid on platelet and hematocrit values in patients with break bone fever. a complete of 80 patients were volunteered from the tertiary healthcare center in central India. Subjects were randomized into two groups, 40 patients were intervention groups who received two *C. paw-paw* fruit foliole extract capsules (CPC) thrice daily and rest 40 were controls. The outcome of this study showed that administration of paw-paw fruit foliole fluid was beneficial in dengue patients in elevating the platelet count ( $p < 0.05$ ) and maintained stability of hematocrit within the normal level in those patients who were subjected to *C. paw-paw* fruit foliole extract capsules. last the paw-paw fruit tree leaf extract may be used as an extra or as a complementary drug in infectious disease patients with thrombocytopenia; it accelerates the rise within the platelet count and shorten the hospitalization thereby reducing the price of hospitalization significantly.

### KEYWORDS:

Carica, Dengue, Hematocrit, Thrombocytopenia.

### I. INTRODUCTION

Dengue is that the most typical mosquito borne arbo viral complaint affecting mortals and may be a commanding reason behind morbidity and mortality within the tropics and

subtropics regions. It belongs to Flaviviridae family and is transmitted by the mosquitoes unheroic- fever mosquito <sup>(1)</sup>. It produces a good diapason of clinical illness, ranging from an asymptomatic or mild febrile illness, classic dengue fever

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to the foremost severe kind of illness; dengue haemorrhagic fever (DHF), which ends from severe thrombocytopenia <sup>(2)</sup>. Carica paw-paw fruit (*C. paw-paw* fruit) may be a member of the caricaceae and may be a dicotyledonous, polygamous and diploid species <sup>(3)</sup>.

It began from Southern Mexico, Central America and thus the northern a part of South America. It's now cultivated in numerous tropical countries similar as India, Bangladesh, Indonesia, Sri Lanka, Philippines, archipelago and Malaysia. The paw-paw fruit is encyclopedically consumed either in its fresh form or the shape of fluids logjams and formed dry fruit. The ripe fruit is said to be a source of anti-ophthalmic factor, C and calcium. There are numerous marketable products deduced from the different corridor of the *C. paw-paw* fruit factory, the most prominent being papain and chymo-papain which is produced from the latex of the youthful fruit, stem, and the foliole. *C. Paw-paw* fruit foliole are employed in folk drug for hundreds of times. Recent studies have shown its salutary effect as an anti-inflammatory agent, for its crack mending parcels <sup>(4)</sup> anti-tumor further as immuno-modulatory goods <sup>(5)</sup> <sup>(6)</sup>. A toxin study (acute, sub acute, and habitual toxin) conducted on Sprague Dawley rats administered with *C. paw-paw* fruit foliole fluid revealed that it was safe for oral consumption <sup>(7)</sup>. Safety studies grounded on OECD (Organization of profitable Cooperation and development) guidelines for acute, sub acute and habitual toxin conducted on *C. Paw-paw* fruit excerpt and showed that it absolutely was plant to be safe for mortal consumption <sup>(7)</sup>.

The foliole of paw-paw fruit are showed to contain numerous active factors. that may increase total antioxidant exertion in blood and reduce lipid per oxidation position, like paper chymopapain, cystatin, tocopherol, vitamin C, flavonoids, and cyanogenic-glycosides glucosinolates<sup>(5)</sup>. The alkaloids, flavonoids, saponins, tannin, and glycosides are related with anti-inflammatory exertion. *C. paw-paw* fruit foliole excerpt also plant to enjoy anti-bacterial effect <sup>(8)</sup>, anti excrescence, and immune modulation conditioning. The splint of *C. paw-paw* fruit is kidney as non poisonous because it's LD50> 15 g per kg body weight. The foliole

also contain cardiac glycosides, anthrax quinones, carpaine, pseudo-carpaine, phenolic composites <sup>(9, 10)</sup>. In addition to the nutritive value of its fruit, the foliole of *C. paw-paw* fruit retain medicinal parcels and are extensively employed in traditional drugs. Former examinations over paw-paw fruit have shown that seed excerpt of *C. paw-paw* fruit retain pharmacological conditioning, including anti-helminthic, anti fertility, contraceptive etc. A hot-water excerpt of the foliole is taken orally as an antipyretic, treatment of anemia and appetite stimulation. In other countries the foliole excerpt of *C. paw-paw* fruit had been effectively used for treatment of dengue fever complaint related to thrombocytopenia <sup>(11)</sup>.

### MATERIALS AND METHODS STUDY DESIGN

In this observational single center prospective study, a complete of 80 cases was analyzed amongst which 40 were dengue patients who endured two *C. paw-paw* fruit foliole extract capsules (CPC) thrice daily and rest 40 were not given capsules and was categorized as controls. This study was conducted on patients getting admitted to Medicine Department of a tertiary care center, Indore from September 2014 to September 2015. Before screening all participating patients acquired the full verbal and written details of the study including study procedure and use within the subject information sheet. Before enrolling, informed patient approval was obtained by their signing of the informed consent form. Clinical Assessments: At screening, enrolment was supported eligibility criteria, case history and clinical examination. Demographic information like age, sex, height and weight were recorded. Pre-study physical examination was disbursed at physician's discretion. All information obtained during screening was entered within the case report form. We included adult males or females with age more than 18 years; patients with fever of but one month duration, platelet count but 100000/ $\mu$ l and voluntary patient consent. All pregnant and lactating females were excluded from the study. Clearance was gained from our institutional ethical and research committee before conducting this study.

### LABORATORY MEASUREMENTS

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All the routine blood investigations were done as per standard protocol. Complete blood count was performed on automated Sysmex Kx-21(TransasiaJapan). All biochemical tests were performed by fully automated VITROS® dry chemistry analyzer. Erythrocyte sed rate (ESR) is decided in EDTA tube using Wintrobe’s Method.

### STATISTICAL ANALYSIS

Data was entered in Microsoft excel 2007 and analyzed on Med Calc Software (Trial Version). Student t test was applied to work out the difference in mean in two groups. P value but 0.05 was considered significant.

### RESULTS

The result showed that CPC had significant increased the platelet count ( $p < 0.05$ ) and maintained stability of hematocrit within the normal level.

The rise of platelet counts within the intervention group is ‘J’ shaped and shallow ‘u’ within the control group independently, demonstrating briskly and significant rise of neutrophils during the critical phase of defervescence Hematocrit situations remained stable in intervention group but change in hematocrit situations in intervention and control group were statistically insignificant

(Figure 2)

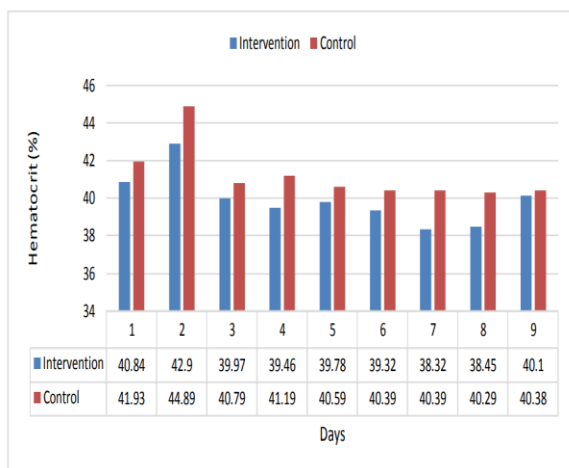


Fig-2: Graph showing the change in hematocrit levels (%) of all subjects

### DISCUSSION

Thrombocytopenia frequently characterized by platelet count but 150000 per  $\mu\text{l}$  of blood is more current and will postdate to a dropped platelet Product and/ or increased destruction. Thrombocytopenia is related to symptoms as bruising, purpura in forearms, point haemorrhages, nose bleeds, and bleeding epoxies. Clinical instantiations of Thrombocytopenia are clement as long as platelet counts are above/  $\mu\text{l}$  and are generally limited to easy. Bruising once the count goes below 10000/  $\mu\text{l}$  the chance of robotic mucocutaneous bleeding (gingival bleed, epistaxis, menorrhagia, petechiae and ecchymoses) and life hanging robotic intracranial haemorrhage or gastrointestinal bleeding increases fleetly <sup>(12)</sup>. Treatment is guided by etiology and complaint inflexibility. The most conception in treating thrombocytopenia is to exclude the underpinning problem, whether which means discontinuing suspected. Medicines that beget thrombocytopenia, or treating underpinning sepsis. Corticosteroids, intravenous immunoglobulin, and splenectomy remain reliance of treatment still, newer curatives including rituxima band the thrombo-protine receptor agonists are redoing conventional treatment algorithms. In (Figure 1), Statistical survey with dependent t test showed significant differences of platelet count ( $p < 0.05$ ).

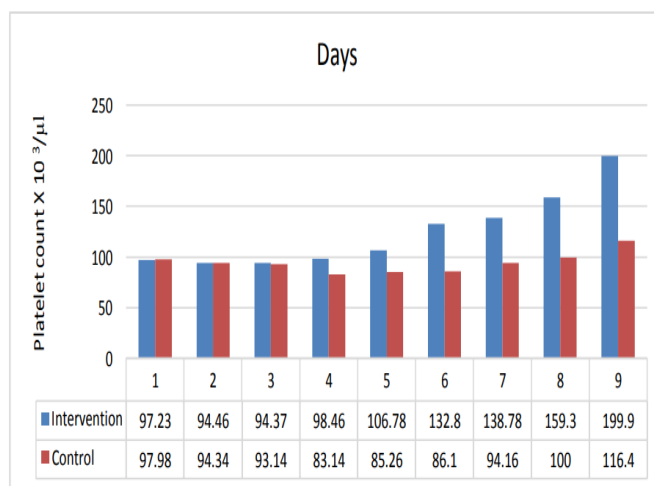


Fig-1: Graph showing the change in platelet count of all subjects

All these above-introduced treatment options have their own advantages and disadvantages. Thus in the current lieu, consideration for alternate curatives to combat the low

platelet count, which is fairly free from the poisonous side goods of the medicine, should be given. Certain genes have been shown to impact platelet product and platelet aggregation, videlicet the Arachidonate 12-lipoxygenase (ALOX 12) also known as the Platelet- type Lipoxygenase as well as the Platelet- Cranking Factor Receptor (PTAFR). An increase in exertion of these genes is needed for platelet product and activation. The PTAFR gene has been planted to be revealed in mega karyocytes showing the signs of that it could be a precursor for platelet product in addition to its well given part in platelet aggregation. ALOX 12 is known to be associated with increased megakaryocyte product as well as its conversion to platelets through 12-HETE intermediated pathway which in turn leads to increased platelet product. The active constituents of *C. papaya* up-regulate the ALOX 12 and PTAFR gene thereby leading to an increased productivity of mega karyocytes and their conversion into platelets. Clinical substantiation shows that *C. Papaya* excerpt increases ALOX 12 exertion 15fold and PTAFR Exertion 13.42 pack which is responsible for increased platelet product<sup>(14)</sup>. Fenny Yunita et al.; showed that *C. papaya* foliole juice significantly accelerates the rate of increase in platelet count among cases with dengue fever and dengue hemorrhagic fever<sup>(15)</sup>. Nisar Ahmed signals the rise of platelet count from 55000/  $\mu$ l to 168000/  $\mu$ l after *C. Papaya* leaves excerpt in dengue fever Case<sup>(16)</sup>. Our study results were also harmonious with these former studies.

### CONCLUSION

*C. papaya* splint excerpt could be used as an Fresh or as a reciprocal medicine in acute febrile illness cases with thrombocytopenia; it accelerates the increase in the platelet count and dock the hospitalization thereby reducing the cost of hospitalization significantly.

### REFERENCE

1. Ahmad N, Fazal H, Ayaz M, Abbasi B H, Mohammad I, Fazal L; Dengue fever treatment with *Carica papaya* leave extract. *Asian Pac JTrop Biomed* 2011; 1(4): 330-333.
2. Wilder-Smith A, Schwartz E; Dengue intravelers. *N. Engl. J. Med.* 2005; 353(9):924–32.
3. Arumaganathan K, Earle ED; Nuclear DNA content of some important plant species. *PIM ol Biol Rep* 1991; 9:208-218.
4. Gurung S, Skalko-Basnet N; Wound Healing properties of *Carica papaya* latex: in vivo evaluation in mice burn model. *J Ethnopharmacol* 2009; 121:338-41.
5. 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; 127:760-67.
6. Imaga NA, Gbenle G, Okochi VI; Phyto-chemical and antioxidant nutrient constituents of *Carica papaya* and *parquetin nigrescens* extracts. *Sci Res Essays* 2010; 5:2201-05.
7. Halim SZ, Abdullah NR, Afzan NR, Abdul Rashid BA, Janthan I, Ismail Z; Acute toxicity of *Carica papaya* leaf extract in Sprague Dawley Rats. *J Med Plants Res* 2011; 5:1867-72.
8. Romasi EF, Karina J, Parhusip AJN; Antibacterial activity of papaya leaf extract against pathogenic bacteria. *Makara Teknologi* 2011; 15:173-77.
9. Owoyele BN, Adebulukola OM, Fumilayo AA, Soladeye AO; Anti inflammatory activities of ethanolic extract of *Carica papaya* leaves. *Inflam mopharmacol* 2008; 16:168-73.
10. Zunjar V, Mammed D, Trivedi BM, Daniel M; Pharmacognostic, physic-chemical and phytochemical

- studies on *Carica papaya* Linn leaves. *J Pharmacognosy* 2011; 3:5-8.
11. Sathasivam K, Ramanadhan S, Mansor SM, Haris MR, Wernsdorfer WH. Thrombocyte count in mice after administration of papaya leaf suspension. *Wien Klin Wochenschr* 2009; 121:19-22.
12. Sekhon SS, Roy V; Thrombocytopenia in adults: A practical approach to evaluation and management. *South Med J* 2006; 99:491-8.
13. Kaur G, Jalagadugala G, Mao G, Rao AK; RUNX1/core binding factor A2 regulates platelet 12-lipoxygenase gene (ALOX12): Studies in human RUNX1 haplodeficiency. *Blood* 2010; 115:3128-35.
14. Dharmarathna SL, Wickramasinghe S, Waguge RN, Rajapakse RP, Kularatne SA; Does *Carica papaya* leaves extract increase the platelet count? An experimental study in a murine model. *Asian Pac J Trop Biomed* 2013; 3:720-4.
15. Yunita F, Hanani E, Kristiano J; The effect of *Carica papaya* leaf extract capsules on platelet count and hematocrit level in dengue fever patients. *Int J Med Arom Plants* 2012; 2:573-8.
16. Nisar Ahmed, Hina Fazal, Mohammad Ayaz, Bilal Haider Abbasi, Ijaz Mohammed, et al.; Dengue fever treatment with *Carica papaya* leaves extracts. *Asian J Trop Biomed* 2011; 1:330-3