ORIGINAL ARTICLE

Incremental Response of Total Thrombocyte Count of Papaya Leaves

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ABSTRACT

Aim: To determine the incremented response of total thrombocyte count papaya leaves on healthy rabbit.

Methods: The research was conducted to find out the platelet increasing property of Carica Papaya Leaves powder in healthy rabbits. Randomized controlled trial was carried out on Eighteen (18) healthy rabbits. Approximately twelve (12) received the Carica Papaya Leaves powder at the dose of 250 mg/500mg & standard diet for 45 days, however, the others continued as controls &given standard and regular food. Their full Count of Blood and Liver Function Test was monitored as 0, 15, 30 & 45 days.

Result: The study showed increased Platelet counts 4.8% and 11.2% in Group B & C as compared to Control Group A Comparison of Cumulative means platelet counts between tested rabbits and Baseline showed that mean platelet counts was significantly higher. WBC was significant increased in Test Cumulative Mean as compared to Baseline $p<0.05$ and Neutrophil, Lymphocytes, Eosinophiles & Monocytes were no significant difference observed in tested group. Whereas no significant effects observed in the level of SGPT & Alkaline Phosphatase.

Conclusion: It was concluded the increase in the dose of Carica Papaya Leaves powder increases the thrombocytes counts and thereby could aid in reducing the bleeding time.

Keywords: Carica Papaya, Thrombocytes, Liver, Rabbits, Leaves.

INTRODUCTION

Carica papaya is a member of the Caricaceae[1].The fruit of papaya is consumed worldwide either in form of jams, juices, and crystallized dry fruits or in its fresh form[2]. This fruit is found to be very rich source of calcium, vitamin A, and C[3]. There are several marketable stuffs derived from the various portions of plant of papaya, the commonest being chymopapain and papain, which are created from the liquid of leaves, stem and young fruit[4]. The reported remedial properties of various parts of Carica Papaya includes anti-hypertensive, anti-helmintic anti-bacterial, diuretic, anti-fertility, hypo-lipidemic, anti-fungal, phenolic, alkaloids, anti-tumor effects etc. The Papaya leaves also contain flavonoids[5-7]. Leaves are used as folk medicine for centuries. Some medicinal uses of Carica papaya leaves as mentioned in ancient Ayurvedic literature e.g., leaves as vegetable, dressing wound, vermifuge, antibacterial, jaundice, gonorrhea, beriberi, fever and asthma[8]. Latest researchers have revealed its advantageous outcomes as a wound healing, immunomodulatory, hypolipidemic & hypoglycemic activity, anti-inflammatory activity, anti-tumor activity, Anti-viral activity e.g. Dengue virus and anti-oxidant activity[9-14]. Papaya leaves also used in poultice into nervous pains and elephantoid growth[15].

In this study was designed to determine the incremented response of total thrombocyte count by papaya leaves and LFT (liver function test) were observed to confirm the protection, because liver is major site for thrombopoietin production required to the maintain normal platelet[16].

MATERIALS AND METHODS

Eighteen (18) healthy adult rabbits and mean weight approximate 3.2kg and either sex, were kept under standard condition of well aerated room and were maintained temperature in the animal house of the Baqai Medical University, Karachi. They were divided into 3 groups of 6 rabbits each: Group A (control; n= 6), Group B (Tested animals; n= 6), Group C (Tested animals; n=6). The rabbits were fed with varying doses of provided Papaya seed and standard diet (hay + water) as follow; Group A (control= standard diet (hay+water)/ no sample test meal), Group B (Tested animals= sample test meal 250mg/OD and standard diet (hay+water), Group C (Tested animals=

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sample test meal 500mg/OD and standard diet (hay + water) for 45 days. Study design was experimental and interventional, conducted during September to November 2015.

Sample Preparation:

Leaves: From the plants of Papaya the Papaya leaves were collected from different areas of Malirbangla or memongoth, Karachi. Samples were cleaned with water immediately to remove sand particles, dust and further contaminants. At normal room temperature the samples were dried out for 2 weeks and with the use of electrical grinder these were pulverized to powder. Measured amount of powder of papaya was filled in small envelopes (made of plastic)and kept at normal temperature of room and fed 250 to 500 mg[17].

Sample administration: Measured leaves powder was introduce into 10ml plain tap water and subsequently were syringed into oral cavity[18].

Analytical Parameters: Complete Blood Count and Liver Function Test were recorded on the first day of the experiment and at 15, 30 and 45 days. Blood samples were collected from large visible veins by venipuncture, extracts blood was immediately transfer into desirable containers for assessment.

Statistical Analysis: Result was evaluated using SPSS 16.

RESULT

Powder of Carica Papaya leaves tested on animals revealed the notable growth in count of thrombocytes at 250mg to 500mg dose orally once daily for 45 days. The scheduled laboratory assessment was done at 0, 15, 30 and 45 days. Intake of powder of leaves at quantified methodology of dosing presented a noteworthy statistically improved response in the count of total thrombocyte. This experiment revealed the upsurge in the count of Platelets to 4.8% and 11.2% in Group B & C as compared to Control Group ATable-1 and figure. In the Comparison of platelet counts between tested rabbits (mean ± S.D= 477 ± 24.5, 506 ± 41.7) and Baseline showed that mean platelet counts was significantly higher than Baseline group (mean ± S.D= 434 ± 104.7) and p-value <0.05 Table-2. Furthermore there was a noteworthy increase in WBC count in Test, Cumulative Mean (mean ± S.D= 10.5±1.25, 11.3±1.05) as compared with Baseline (mean±S.D = 8.2±.04, 8.7± 0.23) p-value <0.05 and Neutrophil, Lymphocytes, Eosinophiles & Monocytes were no significant difference observed in tested group. Moreover SGPT & Alkaline Ph. were showed no significant effects observed in Group B & C as compared to Group A (Control).

Table-2. Comparisons of Platelets, WBCs, Neutrophils, Monocytes, Eosinophils Lymphocytestest of estimation (Cumulative mean ± S.D) of B and CGroups (Leaves -fed 250mg/ OD and 500mg/OD) from Baseline.

Variables	Baseline (n=6)	B-Group (n=6)	C-Group (n=6)
	Mean ± S.D	Mean ± S.D	Mean ± S.D
Hematology			
Platelets	434 ± 104.7	477 ± 24.5*	506 ± 41.7*
WBCs	8.7 ± 1.01	10.5 ± 1.25*	11.3 ± 1.05*
Neutrophils	9.8 ± 5.25	15.3 ± 3.87	13.9 ± 4.47
Monocytes	1.6 ± 0.50	1.5 ± 0.51	1.6 ± 0.62
Lymphocytes	86.7 ± 5.59	81.3 ± 4.35	82.9 ± 5.18
Eosinophils	2.0 ± 0.55	1.8 ± 0.51	1.7 ± 0.59

* Significant as compared to baseline (Day-0) p<0.05

Table 3: Comparison of WBCs, Neutrophils, Monocytes, Eosinophils, Lymphocytes estimation test of Group-B (Leaves-fed 250 mg) from Baseline (Day-0)

	Baseline	Test Cumulative	P-value
	Mean ± S.D	Mean ± S.D	
Hematology			
WBCs	8.2 ± 1.04	10.5 ± 1.25	0.001
Neutrophils	15.5 ± 2.59	15.3 ± 3.87	0.923
Monocytes	1.5 ± 0.55	1.5 ± 0.51	1.000
Eosinophils	2.3 ± 0.82	1.8 ± 0.51	0.089
Lymphocytes	80.7± 3.44	81.3 ± 4.35	0.737

Significant difference (p<0.05)

Table 4: Comparisons of WBCs, Monocytes, Eosinophils, Lymphocytes, Neutrophils estimation test of Group-C (Leaves –fed 500mg) from Baseline (Day 0)

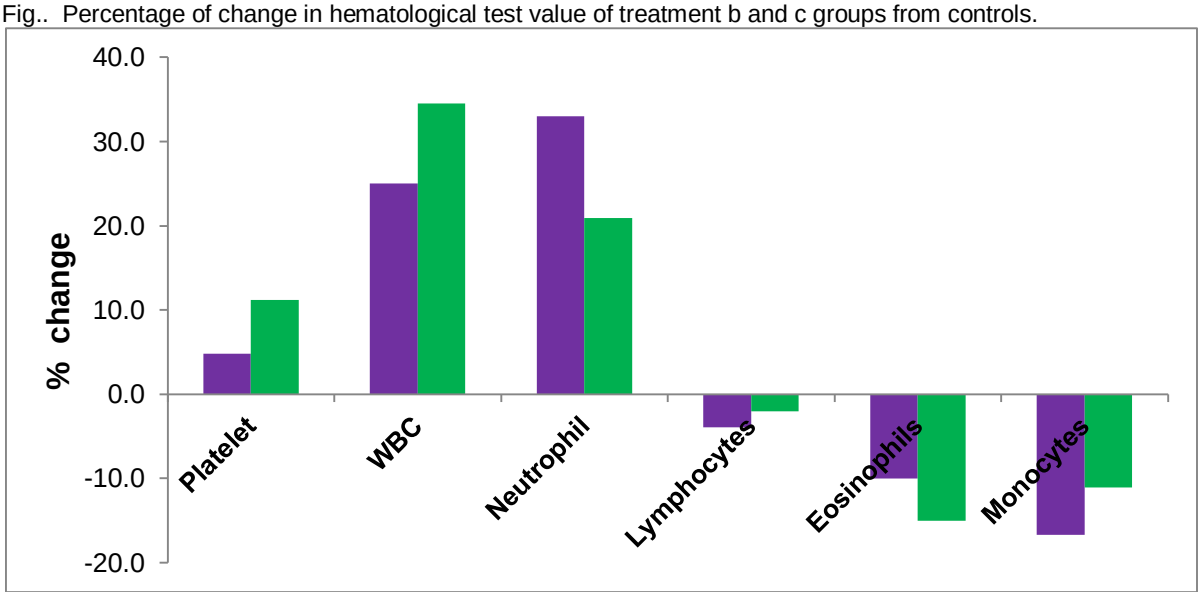
	Baseline	**Test Cumulative**	
	Mean ± S.D	Mean ± S.D	P-value
Hematology			
WBCs	8.7 ± 0.23	11.3 ± 1.05	0.001
Monocytes	1.7 ± 0.52	1.6 ± 0.62	0.696
Eosinophils	1.8 ± 0.75	1.7 ± 0.59	0.583
Lymphocytes	83.2 ± 4.26	82.9 ± 5.18	0.907
Neutrophils	13.3 ± 3.50	13.9 ± 4.47	0.785

Significant difference: ($p<0.05$)

Table 1: %HematologicalChange of B and C Group from Control

Hematology	**B-Group (n=6) %**	**C-Group (n=6) %**
Platelets	4.8	11.2
WBCs	25.0	34.5
Neutrophils	33.0	20.9
Monocytes	-16.7	-11.1
Eosinophils	-10.0	-15.0
Lymphocytes	-3.9	-2.0

Fig.. Percentage of change in hematological test value of treatment b and c groups from controls.



B-Group = Leaves-fed (250 mg), C-Group = Leaves-fed (500 mg).

DISCUSSION

Globally, Carica papaya is commonest and economically significant plant. Various portions of papaya plants including seeds, leaves, stems, roots, and fruits have been used as elements in alternative medicine. The leaves are being used for treatment of diabetes, gonorrhea, inflammation, pyrexia, syphilis, and as a covering for septic wounds. Nowadays, many tropical and sub-tropical countries are overwhelmed by infection of Dengue. Dengue has a significant mortality and till now there is no particular therapy available. Therefore, in this intervention, we examined impact of consuming (orally) powder of papaya leaves on platelets/biochemical parameters and toxicological variations among healthy rabbits.

Outcomes of therapeutic dose showed a noticeable increase in count of total platelets. Though, the enhanceddoseof500mg (powder of leaves) revealed the effects as expected logically, the bioactive elements of leaves were capable to arouse the construction of platelets when dose is increased. WBC counts in healthy rabbits after feeding 250mg/OD and 500mg/OD with 45 days of C. papaya leaves powder. On the basis of 4.8% and 11.2% increase in Total platelet count that show direct proportion of incremental response. Consequently, one can measure the increase of the dose which may

show the increase in quantity of platelets. During the entire experiment period all the animals which are included in the study kept on healthy. No significant undesirable outcomes observed in the tested rabbits as demonstrated by the biochemical tests. Hence, interventions to find out harmful and advantageous impacts of powder of papaya leaves among animals will be a basis for further research in prospect. As healthy animals were involved in this intervention; so we don't have awareness of any change in count of platelets in the state of dengue fever (thrombocytopenic state).

CONCLUSION

It is determined that the consumption of C. papaya leaves inducethe rapid increase in the count of platelets. In the near future it may play a valued role in managingthe Dengue Fever.

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Conflict of interest: The authors declare that they have no conflict of interest.

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