



Research Article

ASSESSMENT OF EFFICACY OF GOJIVHADI CHURNA IN THROMBOCYTOPENIA - A PILOT STUDY

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ABSTRACT

Thrombocytopenia is a condition in which platelet count drops below 150×10^9 per l. Many diseases may cause this manifestation like dengue, malaria, leukemia, lymphoma, aplastic anemia, heavy alcohol consumption, megaloblastic Anaemia, chronic liver disorder, Infections etc. Patients who present with thrombocytopenia as a part of a multisystem disorder usually are ill and require urgent treatment. The various treatments available for thrombocytopenia in contemporary medicine have their own limitations. According to Ayurvedic Classics Thrombocytopenia can be correlated with *Raktapitta*. In all the Ayurvedic Samhitas many combinations of medicines are prescribed for *Raktapitta*. In the present study; powder combination of *Gojivha* (*Brassica Oleracea*), *Amalaki* (*Emblica Officinalis*) and *Guduchi* (*Tinospora Cordifolia*) was administered to 10 patients with established Thrombocytopenia. 500mgm of this *Gojivhadi churna* was given in morning and evening, BD dose, on empty stomach along with water for 7 days. WBC count and platelet count were recorded in the morning on empty stomach before and after the treatment that is, after 7 days. Observations were recorded in tabular form. As the sample size is small for application of any statistical test for significance of result; means were compared. Significant improvement in both WBC count and Platelet count was observed in all 10 patients without any adverse reactions.

INTRODUCTION

Thrombocytopenia refers to low platelet count which may range from mild to severe, it depends on the underlying cause. When the skin is injured or broken, platelets get clumped together and form clots to stop the bleeding. When the count of platelets is not enough in the blood, body cannot form clots. Each platelet lives only for about 10 days. Our body normally renews the platelet supply continually by producing new platelet in our bone marrow. Thrombocytopenia rarely is inherited. It can be caused by a number of medications or conditions. Whatever the cause, circulating platelets are reduced by one or more of the following processes; trapping of platelets in the spleen, decreased platelet production or increased destruction of platelets.

Thrombocytopenia is defined as a platelet count of less than $150 \times 10^3/\mu\text{l}$. It is observed that patients with platelet counts more than $50 \times 10^3/\mu\text{l}$ rarely show symptoms. A platelet count from 30 to $50 \times 10^3/\mu\text{l}$ rarely manifests as purpura. A count from 10 to $30 \times 10^3/\mu\text{l}$ may cause bleeding with minimal trauma. A platelet count less than $5 \times 10^3/\mu\text{l}$ may cause spontaneous bleeding and contributes hematologic emergency.^[1] Thrombocytes are platelets and penia means; not enough of something; hence low amount of platelets in the blood is termed as Thrombocytopenia. A normal platelet count in humans ranges from 150,000 to 450,000 platelets per microliter of blood.^[2] Platelets (thrombocytes) are colourless blood cells which help in blood clotting. Platelets stop bleeding by clumping and forming plugs in blood vessel injuries. Thrombocytopenia may occur as a result of a bone marrow disorder such as leukemia or an immune system disorder. It can be side effect of taking certain medications. It affects adults as well as children.^[2] Thrombocytopenia can result from decreased platelet production, increased platelet consumption or sequestration.^[3,4] Human's survival depends on the

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capacity of blood to remain fluid within the circulatory system and to clot promptly following injury to blood vessels. Blood loss is minimized by vascular integrity and the soft tissue support to small vessels, by circulating platelets and by several plasma proteins which are responsible for the coagulation process. Platelets normally have a circulating lifespan of 10 +/- 1.5 days as anucleate fragments 2 to 3µm in diameter. At any given time two thirds of the total functioning platelets are in the circulating blood, with one third stored in the spleen.^[5] Viable platelets are necessary for normal retraction of the fibrin clot. The prevalence of Thrombocytopenia during pregnancy in Indian population is similar to world literature (5 to 12%).^[6] The prevalence of Immune Thrombocytopenia is 9.5 per 100,000 persons. There is predominance of males in childhood and of females in the middle adult years with an overall prevalence rate ratio of 1:9 for females to males.^[7] Thrombocytopenia is one of the most common hematological disorders seen in critically ill patients. Prevalence has been found to be around 50% and incidence varies between 13% and 44%.^[8,9]

According to Ayurvedic classics Thrombocytopenia can be correlated with *Raktapitta*. When *Pitta* gets vitiated *Rakta* increases in amount due to *Usna guna* of *Pitta*, it starts flowing out of the body through different parts-upward, downward or both, or through skin pores. According to based-on direction of blood flowing.^[10] The prodromal symptoms of *Raktapitta* include aversion to food, hot eructation just after meal, belches with smell and after taste of sour gruel, frequent vomiting, ugliness of vomitus, hoarseness of voice, malaise, radiating burning sensation, emittance of smoke from the mouth, smell of metal, blood or fish, mucus in the mouth, appearance of red, green or yellow spots in body parts, feces, urine, sweat, saliva, nose secretion, excreta from mouth and ear, boils, body ache, frequent vision of red, blue, yellow, blackish and brilliant objects in dream.^[11] *Raktapitta* is classified into three types, which are as follows a) *Urdhvaga*- the causative attributes are *Snigdha* and *Ushna guna* which vitiate the combination of *Kapha* and *Pitta* and oozing of contaminated blood occurs from upward passages or orifices i.e., from *Mukha* (mouth), *Karna* (ears), *Akshi* (eyes) and *Nasa* (nostrils). b) *Adhoga*- the attributes are *Ruksha* and *Ushna guna* which causes vitiation of *Vata* and *Pitta* and oozing of contaminated blood occurs from downward passages or orifices i.e., from *Guda*, *Yoni* and *Mutra marga*. c) *Tiryaka*-when all the *Dosas* are vitiated and are circulating in the blood stream, the manifestation is subcutaneous.^[12] Idiopathic Thrombocytopenic Purpura (ITP) can be correlated with *Tiryaga Raktapitta* as, in both vitiation of *Rakta* occurs and manifestation is subcutaneous.^[13]

Herbs and human health can never be separated. The vegetables and fruits are herbs in a way, they are essential for good health. However, there are many herbs, which have medicinal values due to presence of certain enzymes, amino acids, alkaloids, vitamins etc.^[14] Therapeutical properties of medical plants are very useful in healing various diseases and the advantage of these medicinal plants is, being 100% natural. Nowadays people are being bombarded with thousand unhealthy products, the level of sensibility in front of diseases is very high and that's why the use of medicinal plants can represent the best solution.^{[15],[16]}

In the present study combination of *Gojivha* (*Brassica Oleracea*), *Amalaki* (*Embllica Officinalis*), *Guduchi Sattva* (*Tinospora Cordifolia*); in powder form was studied under the name "*Gojivhadi Churna*".

Vitamin C is responsible for helping platelets group together to function properly. It also helps the body to absorb iron which also contributes in increasing the platelets. Vitamin K is necessary to ensure a healthy growth of cells at an optimum level in the body. It is responsible for activating proteins which stimulate the formation of blood clots. Cauliflowers are rich sources of Vitamin C and Vitamin K. They are very nutritive, providing nutrients and health promoting phytochemicals such as vitamins, carotenoids, fiber, soluble sugars, minerals, glucosinolates and phenolic compounds.^[17] Cauliflower, like Broccoli and Cabbage belongs to the cruciferous (*Brassicaceae*) family of vegetables, which has been shown to be effective in fighting cancer. Cauliflower and Broccoli are closely related. They contain nutritive value of vitamin A, thiamine, riboflavin, niacin, vitamin C, calcium, iron, phosphorus to fight diseases.^[18]

Aamalaki has *Amla*, *Madhura*, *Kashaya Rasa*; *Guru*, *Ruksha*, *Sheeta Guna*; *Sheeta Veerya*, *Madhura Vipaka* and it is *Rasayana*, *Tridosha shamaka*, especially *Pittashamaka*^[19]. It is indicated in *Paittika vikara*, *Raktapitta*, *Raktavikara* and as *Shonita sthapana*. It contains vitamin C, carotene, nicotinic acid, riboflavine, Gallic acid, Tannic acid and glucose.

Acharya Bhavprakash has mentioned the action of *Guduchi* (extract) as *Rasayana* (rejuvenation), *Sangrahi* (astringent), *Balya* (increases the strength), *Agnidipana* (increases digestive fire) and *Tridoshashamaka*^[20]. It contains Berberine as principle component along with Giloin^[21]. It has pharmacological action of immunomodulation, anticoagulation and antineoplastic activity so it reduces the immunologic destruction of platelets and increased megakaryocytes in the bone marrow.^[22]

MATERIALS AND METHODS

Gojivha (*Brassica Oleracea*), *Amalaki* (*Embllica Officinalis*) and *Guduchi* (*Tinospora Cordifolia*) were selected for the study. All the three drugs were taken in powder form. *Gojivhadi Churna* was prepared and standardized in GMP certified pharmaceutical laboratory. 500mgm of *Gojivhadi churna* was administered morning and evening empty stomach, BD dose, along with water for 7 days to 10 patients.

Composition of *Gojivhadi Churna*

1. *Gojivhadi Churna* - 300 mgm.
2. *Amalaki Churna* - 100 mgm.
3. *Guduchi Sattva* - 100 mgm.

Inclusion Criteria

- 1) Patients of age group between 18 yrs, to 60 yrs., either gender.
- 2) Patients diagnosed Thrombocytopenia.
- 3) Patients with a Platelet count less than 1,50,000/cu.mm upto 50,000/cu.mm.

OBSERVATION**Exclusion Criteria**

- 1) Patients below 18 yrs. and above 60 yrs.
- 2) Patients with Idiopathic Thrombocytopenia Purpura (ITP), Leukemia, Hemophilia, Dengue fever patients with severe bleeding manifestation and decreased consciousness.
- 3) Patients suffering from Dengue Haemorrhagic fever and Dengue Shock Syndrome.
- 4) Pregnant or lactating women.
- 5) Patients who have received blood or blood products transfusion during the current hospital stay.
- 6) Patients with underlying comorbid.
- 7) Patients with a Platelet count of less than 50,000/cu.mm.

Valid, informed, written consent was obtained from the patients after explaining the consequences and nature of the study in the language best understood by the patient. Screening and selection of the patients was carried out as per inclusion and exclusion criteria.

Table 1: Platelet Count			
Sr. No.	BT	AT	Increase in %
1.	80,000	89,000	11.2%
2.	89,000	117000	31.4%
3.	101000	106000	4.9%
4.	140000	172000	22.8%
5.	51000	146000	186.2%
6.	144000	176000	22.2%
7.	101000	132000	30.6%
8.	168000	176000	4.7%
9.	62000	128000	106.4%
10.	58000	130000	124.1%

Table 2: WBC Count			
Sr. No.	BT	AT	Increase in %
1.	2700	5100	55.8%
2.	2100	9800	366.6%
3.	3600	5200	44.4%
4.	3800	4000	5.2%
5.	1900	8800	363.1%
6.	4800	5600	16.6%
7.	2400	3500	45.8%
8.	5200	6000	15.3%
9.	3400	5800	70.5%
10.	1800	6400	255.5%

RESULTS

Since the sample size was small and there was no control group, no statistical tests could be applied. The mean elevation in platelet count was observed to be 30,000/ μ l. The mean elevation in WBC count was observed to be 2512.5/ μ l. The mean increase in Platelet count is 54.45%. The mean increase in WBC count is 127.18%.

DISCUSSION

The cumulative effect of *Gojivha*, *Amalaki* and *Guduchi* works very well in elevating WBC and Platelet count. Vitamin K & vitamin C present in *Gojivha* and *Amalaki* activate proteins which in turn stimulate coagulation. Vitamin C present in both herbs increases number of platelets by absorbing iron. *Amalaki* and *Guduchi* both are revered as a *Rasayan dravya* by our Acharyas for their rejuvenating action on cells. *Guduchi's* immunomodulating action helps in reducing destruction of platelets.

CONCLUSION

In this Pilot study it was observed that *Gojivhadi Churna* significantly increases Platelet count and WBC count.

No adverse reaction was observed during the study. *Gojivhadi Churna* should be further evaluated in a larger sample size with a control group to establish the efficacy and statistical significance.

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