A Comparative Clinical Study on the Effect of *Guda Haritaki* and *Amurta Choorna* in the Management of *Panduroga* (Iron Deficiency Anemia)

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ABSTRACT

Panduroga is a Pitta predominant disease that occurs due to the degeneration of Agni. It can be correlated with anemia based on its signs and symptoms. Iron deficiency anemia is one of the most prevalent types of nutritional disorders worldwide. Classical texts recommend Guda Haritaki and Amurta Choorna for Panduroga. This is a randomized comparative clinical study of Guda Haritaki and Amurta Choorna for the treatment of Panduroga with respect to Iron Deficiency Anemia. The main objective of the study is to comparatively evaluate the effect of Guda Haritaki and Amurta Choorna on Panduroga (IDA). The study was conducted at the OPD of National Ayurveda Teaching Hospital, Borella. Data were collected from 60 patients aged between 20 and 70 years of either sex. 30 patients in Group A were treated with 8g of Guda Haritaki with 30ml of lukewarm water. 30 patients of group B were treated with 5gm of Amruta choorna mixed with 2.5ml of ghee, and bee's honey was given twice a day for 90 days. The assessment was based on clinical improvement of Panduroga, Hb%, and RBC as objective parameters. Data were analyzed using SPSS statistical software. Distribution of patients based on Agni showed the highest incidence of patients with Mandagni and had taken excessive Amla Rasa, followed by Lavana and Katu Rasa. The significance level is greater than 0.05 ($p>0.05$) in both groups. The effect of 16 characters of subjective parameters with Guda Haritaki and 12 characters with Amurta Choorna were highly significant ($p<0.000$), and Hb%, with RBC, were highly significant ($p<0.000$) in both groups. Comparative effect between group A and group B was statistically insignificant ($P>0.05$). The overall effect of the therapy indicates a marked improvement (66.7%) in both Group A and Group B (60%). Haritaki possesses Agni Deepana, Ama Pachana, and Anulomana properties, and Guda possesses Agni Deepana and Ashruk Prasadana properties. In the present study, Guda Haritaki showed more significant results than Amurta Choorna due to the enhanced bioavailability of nutrients in Guda Haritaki.

Key words: Panduroga, Iron deficiency anemia, Guda Haritaki, Amurta Choorna

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Introduction

Pandu Roga (PR) is a disease that has been widely described in Ayurveda Samhithas. According to Vijayarakshita, the colour of the patient, like the Ketaki Raja, which resembles the combination of white and yellow colour in the body, is known as PR (Babu, 2009). PR is a Pitta predominant disease characterized by reduction of the complexion, strength, unctuousness, and Ojas (vital essence) in the body (Sharma, 2005). PR is one among the Rasa Pradoshaja Vyadhi as mentioned by Charaka Acharya. The formation of Rasadi Dhatus depends on the proper food intake and action of Jataragni (Sharma & Bhagawan, 1997). Vitiated Pitta Dosha destroys blood, muscle tissue, and the essence of Dhatu. It can produce pallor in the body. Therefore, properties of vital essence, colour, and strength are reduced in PR (Babu, 2009).

As per Ayurveda, PR can be correlated with Iron Deficiency Anemia (IDA) based on its signs and symptoms of the disease. IDA is a condition of reduction in the hemoglobin or red blood cell concentration of the peripheral blood in relation to age and sex. Pallor is the main cardinal sign of IDA, and it can be seen in the skin, conjunctiva, nail beds, mucous membranes, and palm. The non-specific signs of IDA are pallor in the mucus membrane, tachypnea, raised jugular venous pressure, flow murmurs, ankle edema, postural hypotension, and tachycardia. Anemia is a global public health problem affecting both developing and developed countries, with major consequences for human health as well as social and economic development. IDA is one of the most prevalent types of nutritional disorders in the world. Globally, 40% of the total world population is anemic, and half of these 800 million people have iron deficiency (Nicki et al., 2010).

In this study, Guda Haritaki (GH) and Amruta Choorna (AC) were selected as the research drugs. The preparation GH is taken from Panduroga Adhyaya of Bhaishajya Ratnavali. It has been mentioned that GH is used as a treatment for PR. (Choudhary and Dasji, 2016) GH is the combination of Haritaki and Guda (Jaggery). Haritaki (Termanalia chebula; Family: Combretaceae) has Madhura, Amla, Katu, Tikta, and Kashaya Rasa; Laghu and Ruksha Guna; Ushna Veerya; Deepana, Pachana, Anulomana, Tridoshahara, Rasayana, Chakshushya, Hridya, Lekhana, and Prajasthapana effects. It is beneficial to counteract Raktadhatukshaya, Daurbalya, and Ojogunakshaya due to their Rasayana properties. The sugar cane product of Guda increases the quantity of blood, marrow, fat, and flesh. Sugarcane juice is aphrodisiac, sweet in taste, cold in potency, an aggravator of Kapha, and laxative, with unctuous and nourishing

properties. GH fulfils the qualities of appropriateness in disease, palatability, nourishment, therapeutic effect on anemia, and has no complications or side effects. (Sharma & Bhagawan, 1997). Therefore, GH is beneficial for the management of Panduroga (IDA).

AC is mentioned as Naimittika Rasayana for the promotion of intellect. Bhavaprakasha Samhita and Danvantari Nighandu recommended Amurta (Guduchi) for the management of PR (Sitaram 2012). Amurta (Tinospora cordifolia; Family: Menispermaceae) has Tikta and Kashaya Rasa; Snigdha Guna; Madhura Vipaka. Amurta is a medicinal herb that possesses Pittahara properties due to its Tikta and Kashaya Rasa; Snigdha Guna; Madhura Vipaka. It has Rasayana, Deepana, Balya, and Hrdya properties (Pandey 2005). Ghee has Madhura Rasa; Sheeta and Snighda Guna. Ghee alleviates Pitta and conductive Rasa Dhatu and Ojas due to its sweetness and coolness. Bee honey has astringent and sweet in taste; cold potency; heavy and un-unctuous properties. Bee honey is the best Yogavahi substance; it carries the properties of the drug added to it (Sharma & Bhagawan, 2015). Hence, AC mixed with ghee and bee honey is beneficial in the management of diseases occurring due to the vitiation of Pitta Dosha, including PR (IDA). GH and AC with ghee and bee honey essentially refer to acceleration of the process of nutrition for the correct condition of the body tissue. Therefore, GH and AC were selected in the present study to treat patients suffering from Panduroga (IDA).

Significance and Justification of Research

These herbals are used in the treatment of *PR* by traditional and Ayurvedic physicians with promising results. It is observed that there are no known side effects or toxic effects of these drugs. Patients will be able to afford safe treatment containing herbs with no side effects, low cost, and easily available. The results of this study are inspiring researchers to develop novel, effective drugs for *Panduroga* (IDA) and the benefit towards the end. Thus, this study is concerned with the assessment of the efficacy of *GH* and *AC* in the management of *Panduroga* (IDA) condition.

Objectives of the research

The general objective of the study is to comparatively evaluate the effect of *GH* and *AC* on *PR* (IDA), whereas the objectives are to evaluate the effect of *GH* and *AC* with ghee and bee honey in the management of *PR* (IDA) and to explore the more effective treatment among these drugs in the treatment of *PR* (IDA).

Ayurveda review of *Panduroga*

Pandu is a disease that can be diagnosed by observing the patient. PR is mentioned by the terms Vilohita, Haribha, or Halimaka. Acharya Charaka has mentioned the word "Vaivarna," loss of colour or general complexion of the body, as a symptom. (Sharma & Bhagawan, 2005). The natural complexion and redness of the skin are maintained by proper blood flow through the skin, and when there is a diminution in quantity and quality of the blood, the pale colour in the skin is observed. The condition characterized by pallor as the predominant sign is termed PR.

Unwholesome food, incorrect behaviors, and some diseases are the causative factors responsible for the occurrence of PR. Causative factors of food, like excessive consumption of Kshara (alkaline), Amla (sour), Lavana (saline) food, Viruddha (mutually contradictory food), and Asatmyabojana (unwholesome food), play a very important role in the pathogenesis of the PR. Excessive intake of aggravated Pitta Dosha, like Masha, Pinyaka, Tila, Tilataila, etc, leads to the vitiated Pitta Dosha, leading to Agni Mandya (decreased Agni) and resulting in the disease. Viruddha (mutually contradictory food) and Asatmyabojana (unwholesome food) lead to the production of Ama (accumulated indigestible food) and the disturbance of the digestive process. Excessive intake of Kshara (saline) and Amla (sour) taste of food can injure the gastric mucosa, which, then mixed with Rasa Dhatu, leads to hemolysis and disturbed metabolism of various tissues, following the development of anemia. Excessive use of wine and spicy substances continues for a long time, certain pathological changes in the liver and stomach will be observed in the form of cirrhosis, gastritis, or even ulceration, which ultimately will produce anemia either by disturbing vitamin B activity. Poor eating habits, fast food consumption, and inadequate diet can result in deficiencies of several vitamins, A, B2, B6, B12, and folic acid, along with protein, which can cause anemia. These nutritional factors disturb the physiological formation and functioning of blood, leading to the disease PR. Causative factors of behaviors include both physical and mental activities. Excessive exercise, excessive sexual activities, and physical activities increase biochemical reactions of the body. It results in more production of carbon dioxide and water, and the liberation of energy. Severe exercise and not taking an adequate amount of nutrition leads to nutritional deficiencies. Suppression of natural urges, day sleep, and abnormal seasonal changes leads to a disturbance in the normal function of the body, and it leads to disease. Mental activities like passion, worry, fear, anger, and grief lead to the disturbance in the

homeostatic condition of the body, which will lead to the PR (Sharma & Bhagawan, 2005).

Grahani, Jeernajvara, Kaphjaarshas, Plihodara, Raktashrava, Raktarashas, Rajayakshma, Raktarbuda, Rasapradoshaja Roga, Sannipatodara, Shotha, Shwasa, Santarpanajanyaroga, and Upadrava of Raktapitta are the Nidanaartakararoga that act as the causative factors for the PR.
Charaka Samhita has revealed that Hridspandana (palpitation), Rukshata (unctuousness), Swedabhava (absence of sweating), and Shrama (fatigue) are the premonitory symptoms of PR. Susruta Samhita has mentioned that Avipaka (improper digestion of food), Akshikoota Shotha (swelling of the eye socket), Gatrasada (general debility), Mutrapitata (yellowish colour of urine), Mrudbhakshana (desire to eat mud), Shtivana (more of spitting), Tvaksputana (crack of the skin), and Varchapittatva (yellowish white colour of the feces) are the pre-monitory symptoms of the PR. Ashthanga Samgraha mentioned Aruchi (anorexia), Alpagni (poor digestive activity), Angasada (debility), Gatrasada (general debility), and Hridspandana (palpitation) as pre-monitory symptoms of PR. Acharya Charaka & Vaghbata have mentioned the general signs and symptoms of PR. Acharya Susruta has not described the general signs and symptoms but only mentioned the symptoms of Doshik involvement (Murthy 2002).

Arohana Ayasa (effort from climbing), Prekshanakootashotha (swelling of the orbital region), Alpavak (avoid speaking), Aruchi (anorexia), Annadwesha (loss of appetite), Daurbalya (weakness), Bhrama (giddiness), Gaurawa (heaviness), Gatramarda (body been kneaded), Hataanala (suppression of the power of digestion), Hataprabhava (loss of body luster), Jwara (expectoration), Kopana (anger) Karnakshweda (suffers from tinnitus), Nidraluta (feel sleepy), Pindikodweshtana (cramps in the calf region), Panduta (complexion become green), Shishiradwesha (dislike cold things), Shwasa (dyspnea), Shirnalomata (loss of small hair of the body), Sadana (prostration), Shrama (fatigue) and Shithilendriya (looseness of muscles) are mentioned as Rupa (sign and symptoms) of PR by Acharya Charaka (Sharma & Bhagawan, 2005).
There are 5 types of PR mentioned in the Samhita of Charaka, Ashtangahrada, and Madawa Nidana. Mrudbakshana Pandu is not mentioned in the Susruta Samhita (Murthy 2002).

Due to causative factors that lead to vitiated Pitta Dosha and unclean the Rakta Dhatu (blood). Vitiated Vata gets expelled from its seat, and Dosha enters the

vessels and spreads throughout the body. They get settled between the skin and muscle. Then, manifesting the disease of PR, which shows the Panduvarna of the skin. The Anna Rasa (essence of the food) is produced by the action of Jataragni (digestive power). If there is a hypo-function of Jataragni, it leads to the formation of abnormal Anna Rasa. It leads to other Dhatus of the body and ultimately to the diminution of vital essence. It results in producing PR. Sadaka Pitta resides in Hradaya. Hrada is the seat of Avalambaka Kapha and Vyana Vata, which are essential Doshas for the eruption of PR. Hradaya is the seat of Ojas. Brajaka Pitta stays in the skin. This Pitta is responsible for the growing complexion of the skin.

Acharya Charaka has considered PR as vitiated of Rasavaha Srotas. Acharya Susruta considered Raktavaha Srotas. Pitta Dosha is Ashrayi, and Rakta Dhatu is Ashrya. When one is affected, another is also affected. In addition, their sites are Yakrit and Pleha, which are also the same.

Aruchi (loss of appetite), Pipasa (thirst), Jvara (mild fever), Agnisada (weakness of digestion), Shopa (edema), Shirakshoola (headache), Klama (fainting), Hratpida, Shwasa (dyspnea), Kasa (cough), Atisara (loose motion), Shoola (pain), Chardi (vomiting), Murcha (giddiness), Swarabheda (sourness), Daha (burning sensation), Avipaka, and Shotha (swelling) are the complications of PR. The line of treatment given is Snehana, Swedana, Shodana, and Shamana. Vamana and Virechana are essential as Shodana Chikitsa. Acharya Charaka has mentioned Madanapala as the most suitable drug for Emesis in PR. Similarly, Acharya Susruta has mentioned that Haritaki can be given in all types of PR for purgation. As per Ayurveda, PR can be correlated with Iron Deficiency Anemia (IDA) based on its signs and symptoms of the disease (Babu 2009).

Modern Review of Ion Deficiency Anaemia

IDA is a condition of reduction in the hemoglobin or red blood cell concentration of the peripheral blood in relation to age and sex. The three main causes of anemia include excessive blood loss, excessive blood cell destruction (hemolysis), and deficiency of RBC production. Anemia report with feeling of weakness or fatigue and shortness of breath. In severe conditions, the cardiac output markedly increases, leading to palpitation and sweatiness; it can lead to heart failure in elderly people. Pallor is only notable in cases of severe anemia. Therefore, pallor is not a reliable sign. The way to diagnose anemia is with a blood test. A hemoglobin level that is suggestive of anemia is usually less than

13.5g/dl for males and less than 11.5g/dl for females. The morphological approach to anemia is classified by the size of RBCs, which is done by microscopic examination of a peripheral blood smear. The size is reflected in the MCV. Anemia is commonly classified as macrocytic anemia (MCV>100fl), normocytic anemia (80fl<MCV<100fl), and microcytic anemia (MCV<80fl) **(**Kumar and Clark, 1998). Iron deficiency anemia is the most common type of anemia, and it is often hypochromic microcytic. IDA is caused when the dietary intake or absorption of iron is insufficient. Iron is an essential part of hemoglobin, and low iron levels can occur. It results in decreased incorporation of hemoglobin into RBCs.

The usual signs of anemia are fatigue, pallor, and reduced exercise capacity, cheilosis (sores at the corners of the mouth), and koilonychia (spooning of the finger nails). Chronic pulmonary disease, brittle or rigid finger nails or abnormal thinness of finger nails, cold intolerance, impaired immune functions, and impaired neurological development are complications of anemia. HB%, MCV, MCH, MCHC, RBC, serum ferritin, and peripheral smear are the laboratory investigations for Anemia (Nicki *et al*., 2010).

Review of *Guda Haritaki*

Haritaki is mainly composed of *Madura, Amla, Katu, Tikta* & *Kashaya Rasa; Laghu, Ruksha, Sara and Ushna Guna and Madhura Vipaka.* It has *Tridoshaghna, Anulomana, Deepana, Pachana, Varnya, Rasayana, Ayushya, Medhya, Pushtikara* and *Vayasthapana* properties and it is effective on *Agnimandya, Pandu, Kamala, Pleeharoga, Hradaroga, Shiroroga and Vaisvarya*. *Haritaki* contains carbohydrate, protein, fat, vitamin C, ferrous and copper. It has anti-oxidant, rejuvenation, hepato protective and immune modulatory activity (Ashwini, *et al*., 2011). *Guda* is mainly composed of *Madhura Rasa; Laghu and Snigdha Guna. It has Tridoshahara,* especially *Pittagna and Vatagna, Ashruprasadana, Rasayana, Hradya, Agnivardhaka, Ruchikara, Shramahara, Balya, Pushtikara and Vrushya* properties.(42) Jaggery (Guda) has vitamin and C protein, fat, carbohydrate, energy, iron, calcium and phosphorous. It improves digestion, easily digestible, prevents fatigue, purifies blood and provides strength to the muscles.

Review of *Amurta* with ghee and bee honey

Amurta is mainly composed of *Tikta* & *Kashaya Rasa; Snigdha, Guru Guna; Ushna Veeerya and Madhura Vipaka.* It has *Tridoshaghna, Vayasthapana, Ayushya, Deepana, Mala shodana, Rakta Shodana, Rasayana, Varnya, Balya, Medhya, Hrdya*

and Chaksushya properties and it is effective on *Pandu, Kamala, Aruchi, Hrdroga and Agnimandya.* Ghee is mainly composed *Madhura Rasa; Snigdha, Mrudu* and *Guru Guna; Sheeta Veeerya and Madhura Vipaka. It has Balya, Medhya, Rasayana, Vrushya, Rakta shodana, Agni Deepana, Vayasthapana, Malabaddhahara, Chaksushya* and *Vishahara* properties and it is effective on *Pandu, Kamala, Rattapitta, Udhgara, Adhmana* and *Apasmara. Amurta* contains carbohydrate, protein, fat, vitamin B, C, E ferrous, copper, calcium potassium. It has anti-oxidant, rejuvenation, hepato protective and immune modulatory activity. (Salkar, *et al*., 2017). Ghee is the best of all the unctuous substances. When administered according to the prescribed procedure, it increase, thousand times in potency and develops manifold utilities. Ghee has a tremendous capacity to absorb the properties of the drugs mixed with it.

Ghee is mainly composed *Madhura Rasa; Snigdha, Mrudu* and *Guru Guna; Sheeta Veeerya and Madhura Vipaka. It has Balya, Medhya, Rasayana, Vrushya, Rakta shodana, Agni Deepana, Vayasthapana, Malabaddhahara, Chaksushya* and *Vishahara* properties and it is effective on *Pandu, Kamala, Rattapitta, Udhgara, Adhmana* and *Apasmara* (Sharma and Dash 2015).

Bee honey is mainly composed *Madhura, Kashaya Rasa; Guru, Sheeta, Snigdha Guna; Sheeta Veeerya* and *Madhura Vipaka,* aggravate *Vata*, alleviate *Pitta* and *Kapha; Yogavahi* property and it is effective on low blood pressure, heart diseases, cold & cough, hiccups, stress, weakness, eccema, dermatitis, stomach ulcer, vomiting, diarrhea, jaundice and arthritis (Sharma & Bhagwan 2014).

Methodology

This study is a randomized comparative clinical study. The ethical clearance was obtained from Ethics Review Committee of IIM, Sri Lanka.

Inclusion criteria

Patients between age group 20-70 years of either sex., patients having cardinal signs and symptoms of *PR* and patients with IDA, Hb level 9.0- 11.5g/dl for female and 9.0-13.5g/dl for male.

Exclusion criteria

Patients suffering from systemic diseases such as diabetes mellitus (DM), hypertension, hypercholesterolemia, who were consuming alcohol daily, renal disorders, heart disease, liver disorders, tuberculosis, hemorrhoids, heavy menstruations, leukemia, malignancy, a plastic anemia, multiple myeloma, anemia in case of defective absorption due to gastrostomy, spruced syndrome and bleeding disorders or any other chronic disorders and patients who were on allopathic drugs for IDA.

Selection of patients

Patients were selected for the present study irrespective of their sex, religion, occupation etc. Selected patients were registered and examined using a standard Performa. The patients, who are full filling the criteria, would be selected from OPD of National Ayurveda Teaching Hospital, Borella. Selected patients were assigned randomly in to 2 groups namely Group A and Group B with 30 patients in each group. Group A was treated with 8g of *Guda Haritaki* with 30ml of lukewarm water and group B was treated with 5gm of *Amruta choorna* mixed with each of 2.5ml of ghee and bee's honey. All individuals were asked to take twice a day after meals.

Assessment criteria

Both subjective and objective parameters were considered.

Table 01: Subjective parameters

Subjective parameter	Grading	
Panduta (pallor): Twak (Pallor skin), Nakha (nail), Netravartma (conjunctiva), Jihva (tongue)	Coppery red	0
	Light red	1
	Dark pink	2
	Light pink	3
	Pallor	4
Daurbalya (General weakness)	No weakness	0
	Occasionally weakness	1
	Intermittently weakness	2
	Frequently weakness	3
	Always weakness	4
Ayasaja Shwasa (dyspnea on exertion)	Dyspnea on exertion	0
	Dyspnea after heavy work and relieved soon	1
	Dyspnea after moderate work but relieved	2
	Dyspnea after mild work and persist for a long time	3
	Dyspnea even at rest	4
Pindikodweshtana (Leg cramps)	Absent	0
	Cramps in legs only during heavy work	1
	Cramps in legs during moderate work	2
	Cramps in legs during light work	3
	Cramps in legs throughout day even at	4

	rest	
Nidraluta (Sleepiness)	Sleep 7-8 hrs/day	0
	Sleep up to 9-10 hrs/day	1
	Sleep up to 11-12 hrs/day	2
	Sleep up to 13-14 hrs/per day	3
	Sleepy in whole day	4
Ghaurava (Heaviness)	No heaviness	0
	Occasionally heaviness	1
	Intermittently heaviness	2
	Frequently heaviness	3
	Continues felling heaviness	4
Shiroruk (Headache)	No headache	0
	Headache 1-2 times per week	1
	Headache 3-5 times per week	2
	Headache more than 5 times per week	3
	Continues feeling headache during whole day	4
Aasya-Vairasya (unpleasant taste)	Normal taste in mouth	0
	Occasionally feeling of unpleasant taste	1
	Intermittently feeling of unpleasant taste	2
	Often feeling of unpleasant taste	3
	Continues feeling of unpleasant taste	4
Bharma (Giddiness)	No feeling of *Bharma*	0
	Occasionally feels *Bharma*	1
	Intermittently feels *Bharma*	2
	Frequently feels *Bharma*	3
	Always feels *Bharma*	4
Jvara (fever)	98.4 ^{0} f	0
	more than 98.4 ^{0}f up to 100^0 f	1
	more than 100^0 f up to 101^0 f	2
	more than 101^0 f up to 102^0 f	3
	over 102^0 f	4
Sadana (Fatigue)	No fatigue	0
	Fatigue in doing hard work	1
	Fatigue in doing routing work	2
	Fatigue in doing mild work	3
	Fatigue even at rest	4

Gatra Shoola (Body ache)	No feeling body ache	0
	Occasionally feels body ache	1
	Intermittently feels body ache	2
	Frequently feels body ache	3
	Always feels body ache	4
Agnimandya (Impaired appetite)	Normal feels appetite	0
	Occasionally impaired appetite	1
	Intermittently impaired appetite	2
	Frequently impaired appetite	3
	Always feels impaired appetite	4
Aruchi (Anorexia)	No anorexia	0
	Occasionally feels anorexia	1
	Intermittently feels anorexia	2
	Frequently feels anorexia	3
	Always feels anorexia	4
Akshikuta Shotha (swelling of intra orbital region)	No swelling	0
	Occasionally swelling	1
	Intermittently swelling	2
	Often swelling	3
	Continuous present swelling	4
Abnormal *Hrada Spandana* (palpitation)	Normal Palpitation present	0
	Occasionally feel abnormal palpitation	1
	Intermittently feel abnormal palpitation	2
	Often feel abnormal palpitation	3
	Continuous feel abnormal palpitation	4
Ankle swelling	No ankle swelling	0
	Occasionally ankle swelling	1
	Intermittently ankle swelling	2
	Often ankle swelling	3
	Always ankle swelling	4

The clinical symptoms were assessed based on above grading pattern (table 01).

Results

Results of the Demographic Data

In the present study, gender-wise distribution showed that 76.7% of patients were female and 23.3% of males were affected by *PR.* The highest percentage of patients, 35% were exposed in the age group of 61-70 years, 28.3% were in 51-60 years, 13.3% were in 41-50 years, and the least, 8.3% were visible in the age group of 31-40 years. The histogram revealed that the age distribution is approximately symmetrical. The highest percentage of 60% patients were on a non-vegetarian diet pattern, and 40% patients were pure vegetarians. The highest of 53.3% patients were having *Mandagni*, 23.3% had *Samagni*, 16.7% had *Vishamagni*, and 6.7% had *Teekshnagni*. A high of 38.3% of patients preferred *Amla Rasa* dominant food, *Lavana Rasa* preferring patients were 31.7%, *Katu Rasa* preferring patients were 18.3% and the lowest of 11.7% of *Madhura Rasa* preferring patients. A high of 83.3% of patients had *Manda* (poor) appetite, 10% normal appetite, and 6.7% patients had *Ati* (excessive appetite). The highest of 45% patients were having *Krura Koshtha*, 31.7% had *Madhya Koshtha*, and 23.3% had *Mrudu Koshtha*. 90% of patients were having *Avara Sara*, 8.3% of patients were having *Madyama Sara*, and the remaining 1.7% of patients were *Pravara Sara*. BMI detected that highest of 40% of patients were having low weight (<18 Kg/m2), 23.3% patients were normal range (18.5-22.9 Kg/m2), 15% of patients being overweight (23-24.9 Kg/m2), 10% of patients were pre obese (25-29.9 Kg/m2) and 11.6% patients were obese (>30 Kg/m2). *Sharirika Prakruti* noticed that 46.7% of patients were *Vata-Pitta Prakruti*, 16.7% of patients were *Vata-Kapha Prakruti*, and 36.7% of patients were *Pitta-Kapha Prakruti.*

Table 2: Effect of *GH* on subjective parameters of *PR*

Assessment Criteria	Mean score		S.D.	S.E.	df	"t"-value	P-value
	BT	AT					
Panduta (pallor)	3.37	0.80	0.971	0.177	29	14.472	P<0.000
Daurbalya (general weakness)	3.20	0.87	0.922	0.168	29	13.857	P<0.000
Ayasaja Shvasa (dyspnea on exertion)	3.07	0.53	0.819	0.150	29	16.936	P<0.000

Pindikodveshtana (leg cramps)	1.63	0.50	1.252	0.229	29	4.958	P<0.000
Nidraluta (sleepiness)	1.93	0.57	1.217	0.222	29	6.150	P<0.000
Ghaurava (heaviness)	1.17	0.33	1.053	0.192	29	4.334	P<0.000
Shiroruk (headache)	1.73	0.47	0.980	0.179	29	7.077	P<0.000
Aasya-Vairasya (unpleasant taste)	3.07	0.53	0.819	0.150	29	16.936	P<0.000
Bhrama (giddiness)	3.07	0.53	0.819	0.150	29	16.936	P<0.000
Jvara (fever)	0.77	0.37	0.621	0.113	29	3.525	P<0.001
Sadana (fatigue)	2.70	0.77	1.048	0.191	29	10.102	P<0.000
Gatra Shoola (body ache)	1.77	0.57	0.997	0.182	29	6.595	P<0.000
Agnimandya (impaired appetite)	2.53	0.43	1.213	0.222	29	9.479	P<0.000
Aruchi (anorexia)	2.60	0.33	1.015	0.185	29	12.234	P<0.000
Akshikuta Shotha (swelling of intra orbital region)	1.47	0.43	1.189	0.217	29	4.762	P<0.000
Abnormal *Hrada Spandana* (palpitation)	2.13	0.37	0.971	0..177	29	9.961	P<0.000
Pada Shotha (ankle swelling)	1.60	0.27	1.295	0..237	29	5.637	P<0.000

The mean value of *Panduta* from 3.37 to 0.80, *Daurbalya* from 3.20 to 0.87, *Ayasaja Shvasa* from 3.07 to 0.53, *Pindikodveshtana* from 1.63 to 0.50, *Nidraluta* from 1.93 to 0.57, *Ghaurava* from 1.17 to 0.33, *Shiroruk* from 1.73 to 0.47, *Aasya-Vairasya* from 3.07 to 0.53, *Bhrama* from 3.07 to 0.53, *Sadana* from 2.70 to 0.77, *Gatra Shoola* from 1.77 to 0.57, *Agnimandya* from 2.53 to 0.43, *Aruchi* from 2.60 to 0.33, *Akshikuta Shotha* from 1.47 to 0.43, abnormal *Hrada Spandana* from 2.13 to 0.37, *Pada Shotha* from 1.60 to 0.27 has been reduced in statistically significant manner (P<0.000) and *Jvara* from 0.77 to 0.37 27 has been reduced in statistically significant manner (P<0.001).

Table 3: Effect of *GH* on objective parameters of *PR*

Assessment Criteria	Mean score		S.D.	S.E.	df	"t" - value	P-value
	BT	AT					
Hb%	9.89	13.59	1.051	0..192	29	-19.301	P<0.000
RBC count	3.377	4.234	0.429	0..078	29	-10.91	P<0.000

The mean value of Hb% from 9.89 to 13.59, RBC count from 3.377 to 4.234 has been reduced in statistically significant manner (P<0.000).

Table 4: Effect of *AC* on subjective parameters of *PR*

Assessment Criteria	Mean score		S.D.	S.E.	df	"t" - value	P-value
	BT	AT					
Panduta (pallor)	3.07	1.03	1.098	0.200	29	10.142	P<0.000
Daurbalya (general weakness)	2.93	0.80	.973	0.178	29	12.006	P<0.000
Ayasaja Shvasa (dyspnea on exertion)	2.43	0.63	.961	0.176	29	10.256	P<0.000
Pindikodveshtana (leg cramps)	1.63	0.43	1.157	0.211	29	5.682	P<0.000
Nidraluta (sleepiness)	0.97	0.37	1.003	0.183	29	3.275	P<0.003
Ghaurava (heaviness)	1.00	0.30	1.368	0.250	29	2.802	P<0.009
Shiroruk (headache)	1.77	0.63	1.074	0.196	29	5.778	P<0.000
Aasya-Vairasya (unpleasant taste)	2.40	0.63	1.006	0.184	29	9.616	P<0.000
Bhrama (giddiness)	2.03	0.67	1.066	0.195	29	7.021	P<0.000
Jvara (fever)	0.47	0.10	0.615	0.112	29	3.266	P<0.003
Sadana (fatigue)	2.60	0.37	1.159	0.212	29	11.183	P<0.000
Gatra Shoola (body ache)	1.63	0.47	1.234	0.025	29	5.178	P<0.000
Agnimandya (impaired appetite)	1.70	0.47	1.357	0.248	29	4.980	P<0.000
Aruchi (anorexia)	2.73	0.37	1.159	0.212	29	11.183	P<0.000
Akshikuta Shotha (swelling of intra orbital region)	1.17	0.37	1.126	0.206	29	3.890	P<0.001
Abnormal *Hrada Spandana* (palpitation)	1.80	0.47	1.061	0..194	29	6.881	P<0.000
Pada Shotha (ankle swelling)	0.97	0.20	1.165	0..213	29	3.604	P<0.001

The mean value of *Panduta* from 3.07 to 1.03, *Daurbalya* from 2.93 to 0.80, *Ayasaja Shvasa* from 2.43 to 0.63, *Pindikodveshtana* from 1.63 to 0.43, *Shiroruk* from 1.77 to 0.63, *Aasya-Vairasya* from 2.40 to 0.63, *Bhrama* from 2.03 to 0.67, *Sadana* from 2.60 to 0.37, *Gatra Shoola* from 1.63 to 0.47, *Agnimandya* from 1.70

to 0.47, *Aruchi* from 2.73 to 0.37, abnormal *Hrada Spandana* from 1.80 to 0.47 have been reduced in statistically significant manner (P<0.000). *Akshikuta Shotha* from 1.17 to 0.37 and *Pada Shotha* from 0.97 to 0.20 has been reduced in statistically significant manner (P<0.001). Jvara from 0.47 to 0.10 and *Nidraluta* has been reduced in statistically significant manner (P<0.003). *Ghaurava* from 1.00 to 0.30 has been reduced in statistically significant manner (P<0.009).

Table 5: Effect of *AC* on objective parameters of *PR*

Assessment Criteria	Mean score		S.D.	S.E.	df	"t" - value	P -value
	BT	AT					
Hb%	9.89	13.59	1.051	0..192	29	- 19.301	P<0.000
RBC count	3.384	4.254	0.528	0..964	29	-9.021	P<0.000

The mean value of Hb% from 9.89 to 13.59, RBC count from 3.384 to 4.254 had been reduced in statistically significant manner (P<0.000).

Table 6: Comparative effect of *GH* and *AC* on subjective parameters of *PR*

Assessment criteria	Drugs	Mean	SD	SE	t-value	P-value
Panduta (Pallor)	*GH*	0.80	0.847	0.155	- 0.922	0.069
	AC	1.03	1.098	0.200		
Daurbalya (General weakness)	*GH*	0.87	0.860	0.157	0.318	0.396
	AC	0.80	0.761	0.139		
Ayasaja Shvasa (Dyspnea on exertion)	*GH*	0.53	0.819	0.150	- 0.476	1.000
	AC	0.63	0.809	0.148		
Pindikodveshtana (leg cramps)	*GH*	0.50	0.820	0.150	0.354	0.238
	AC	0.43	0.626	0.114		
Nidraluta (sleepiness)	*GH*	0.57	0.37	0.149	1.007	0.227
	AC	0.817	0.718	0.131		
Ghaurava (heaviness)	*GH*	0.33	0.606	0.111	0.197	0.937
	AC	0.30	0.702	0.128		
Shiroruk (headache)	*GH*	0.47	0.63	0.133		

	AC	0.730	0.850	0.155	-0.814	0.254
Aasya-Vairasya (unpleasant taste)	*GH*	0.30	0.535	0.098		
	AC	0.23	0.774	0.141	0.388	0.787
Bharama (giddinesss)	*GH*	0.57	0.774	0.150		
	AC	0.67	0.889	0.148	-0.466	0.850
Jvara (fever)	*GH*	0.37	0.490	0.089		
	AC	0.10	0.305	0.056	2.530	0.000
Gatra Shoola (body ache)	*GH*	0.57	0.774	0.141		
	AC	0.47	0.860	0.157	0.473	0.643
Agnimandya (impaired appetite)	*GH*	0.43	0.728	0.133		
	AC	0.47	0.730	0.133	-0.177	0.667
Sadana (fatique)	*GH*	0.77	0.971	0.177		
	AC	0.87	1.008	0.184	-0.391	0.950
Aruchi (anorexia)	*GH*	0.33	0.661	0.121		
	AC	0.37	0.890	0.162	-0.165	0.472
Akshikuta Shotha (swelling of intra orbital region)	*GH*	0.43	0.774	0.141		
	AC	0.37	0.669	0.122	0.357	0.942
Abnormal *Hrada Spandana* (palpitation)	*GH*	0.37	0.718	0.131		
	AC	0.47	0.629	0.115	0.574	0.821
Pada Shotha (ankle swelling)	*GH*	0.27	0.691	0.126		
	AC	0.20	0.484	0.088	0.433	0.942

The difference mean of *Panduta* 0.8 ± 1.03, *Daurbalya* 0.87 ± 0.80, *Ayasaja Shvasa* 0.53 ± 0.63, *Pindikodveshtana* 0.50 ± 0.43, *Nidraluta* 0.57 ± 0.817, Ghaurava 0.33 ± 0.30, *Shiroruk* 0.47 ± 0.730, *Aasya-Vairasya* 0.30 ± 0.23, *Bhrama* 0.57 ± 0.67, *Jvara* 0.37 ± 0.10, *Gatra Shoola* 0.57 ± 0.47, Agnimandya ± 0.43± 0.47, *Sadana* 0.77 ± 0.87, *Aruchi* 0.33± 0.37, *Akshikuta Shotha* 0.43 ± 0.37, abnormal *Hrada Spandana* 0.37 ± 0.47, *Pada Shotha* 0.27 ± 0.20 between group A and group B is statistically insignificant (P>0.05).

Table 7: Comparative effect of *GH* and *AC* on objective parameters of *PR*

Assessment criteria	Treatments	Mean	SD	SE	t-value	P-value
Hb%	*GH*	13.593	1.0044	.1834	2.359	0.164
	AC	12.897	1.2675	.2314		
RBC count	*GH*	4.23	0.369	0.067	0.216	0.889
	AC	4.25	0.361	0.065		

The difference between Hb% 13.593 ± 12.897 and RBC count 4.23 ± 4.25 between group A and group B is statistically insignificant (P>0.05).

Discussion

It was revealed that female patients were more vulnerable to Pandu Roga, as females were the majority in the selected sample. In a similar study, Kusuma (Kumara, 2012) found that the majority of the patients in his study were females. It revealed that PR is more prominent amongst females. The highest percentage of patients was recorded in the age group of 61–70 years, and it means elderly persons have Dhatu Kshaya, which leads to PR. The highest patients presented in a menopausal state. The physiological process of menstruation, along with nutritional deficiency, leads to the disease of PR. Distribution of patients based on dietary habits showed that patients with a non-veg diet had a high occurrence. This possibly showed a veg diet in the general population coming under this study. Distribution of patients based on Agni showed that the highest incidence was observed amongst patients with Mandagni, abnormal Agni, especially clues to the Ama condition, and its indications to the disease of PR. Distribution of patients based on dominant Rasa showed that the highest value was observed amongst those who took excessive Amla Rasa, followed by Lavana and Katu Rasa. Amla Lavana and Katu Rasa are the causes of an increase in Pitta Dosha and causative factors for PR. Distribution of patients based on appetite shows that the highest incidence is amongst patients with poor appetite. It leads to the formation of the pathogenesis of PR. There was a lower incidence of PR in people who had excessive appetite. In the good appetite category, there was good protection against PR. Distribution of patients based on Koshtha showed that the highest incidence of patients had Krura Koshta. Malabaddha is prominent in Krura Koshtha patients. Therefore, the Anulomana properties of Haritaki could correct that complaint. Distribution of patients based on the nature of Jivha indicates that more patients had coated tongue. This was shown

in patients with the Ama condition, and it led to a higher incidence of PR. Distribution of patients based on the nature of Sara specifies that Avara Sara persons are more affected with PR. Pravara Sara persons were well protected by the disease due to the power of immunity. Distribution of patients based on the nature of Avara Satva. Most of the diseases are included in the psycho-somatic state. Causative factors of behaviour include both physical and mental activities with PR. Therefore, Avara Satva patients were more affected by PR, whereas Pravara Satva people were protected from the diseases. Distribution of patients based on BMI. It appeared that some patients were of low weight. And some were obese. Abnormal body weight could promote the disease due to the accumulation of undigested substances. Distribution of patients based on Sharirika Prakurti, it was observed that most patients were related to the Vata-Pitta and Pitta Kapha. This suggests that Pitta is a risk factor for PR. It led to a higher incidence of PR due to body constitution, and the disease of PR was the same as Doshik involvement. Distribution of patients based on main clinical features showed that the inclusion criteria were present in all the patients. This correlates very well with the signs and symptoms described in classics.

All the patients were also fulfilling the objective parameters mentioned in the inclusion criteria. The distribution of patients based on Hb%, it was observed that all patients were below 11.0 g/dl. The RBC count was below 3.4 million. Cells/µL. It was mentioned that there was a reduction in the quantity of Hb and RBC, resulting in IDA. Peripheral smear showed that most of the patients were in Microcytic Hypochromic anaemia. It was recognised that patients were included in IDA.

PR is one of the Santarpakajanya Vyadhi as described by Charaka Samhita. But the causative factors of PR are associated with Apatarpanajanya Vyadi. The indigestible food passed through the Annavaha Srotas and got converted into Sarabhaga (Annarasa) and Kittabhaga (Mala). The Annarasa nourished all the Dhatus, and the Kittabhaga excreted. Annarasa is produced by the action of Jataragni on food. Improper Annarasa leads to the formation of Apakva Rasa and would consequently produce abnormal Rasadhatu and deficient Raktadhatu. It leads to a decrease in other Poshya and Poshaka Dhatus of the body. Ultimately, there was a diminution of the Ojas (vital essence). As a result, the individual became malnourished and PR was produced.

GH enhanced Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Nidraluta, Ghaurava, Shiroruk, Aasya-Vairasya, Bhrama, Sadana, Gatra Shoola,

Agnimandya, Aruchi, Akshikuta Shotha, abnormal Hrada Spandana, and Pada Shotha in statistically significant manner (P<0.000) except Jvara. GH enhanced Jvara in a statistically significant manner (P<0.001). Discussing objective parameters of GH enhanced Hb%, RBC in a statistically significant manner (p<0.000).

Haritaki is mainly composed of Madura, Amla, Katu, Tikta & Kashaya Rasa; Laghu, Ruksha, Sara, and Ushna Guna, and Madhura Vipaka. It has Tridoshaghna, Anulomana, Deepana, Pachana, Varnya, Rasayana, Ayushya, Medhya, Pushtikara, and Vayasthapana properties, and it is effective on Agnimandya, Pandu, Kamala, Pleeharoga, Hradaroga, Shiroroga, and Vaisvarya. Guda is mainly composed of Madhura Rasa, Laghu, and Snigdha Guna. It has Tridoshahara, especially Pittagna and Vatagna, Ashruprasadana, Rasayana, Hradya, Agnivardhaka, Ruchikara, Shramahara, Balya, Pushtikara, and Vrushy properties. Discussing the above pharmacodynamics properties of GH, it has Tridoshahara, mainly the Pittahara effect due to Madura, Tikta & Kashaya Rasa, and Madhura Vipaka. GH increased the Jataragni and Dhatvagni up to the normal level by correcting the Mandagni. It breaks down the pathogenesis of PR.

Iron deficiency is a well-known form of nutritional deficiency. It occurs when the amount of iron available to the erythrocyte precursors is insufficient. Blood haemoglobin levels are below normal with IDA. According to modern science, Haritaki contains vitamin C, iron, and copper. Vitamin C helps in the absorption of iron and increases the bioavailability of the body. Jaggery (Guda) has vitamins C and protein, fat, carbohydrate, energy, iron, calcium, and phosphorus. It improves digestion, is easily digestible, prevents fatigue, purifies blood, and provides strength to the muscles. Carbohydrates, which are prominently present in Guda, need proper utilisation of vitamin B by the body and arrange it into their natural states. Vitamin B is needed for the assimilation of carbohydrates present. Excess of refined sugar leads to some degree of vitamin B deficiency and includes irritability, nervous exhaustion, sleeplessness, digestive disorders, heart and mental problems. Therefore, GH improved subjective as well as objective parameters of PR significantly.

AC enhanced Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Shiroruk, Aasya-Vairasya, Bhrama, Sadana, Gatra Shoola, Agnimandya, Aruchi, and abnormal Hrada Spandana in a statistically significant manner (P<0.000). Akshikuta Shotha and Pada Shotha had been reduced in a statistically significant manner (P<0.001). Jvara and Nidraluta in a statistically significant manner

(P<0.003). Ghaurava in a statistically significant manner (P<0.009). Discussing objective parameters of AC-enhanced Hb%, RBC in a statistically significant manner (p<0.000). Amurta is mainly composed of Tikta & Kashaya Rasa; Snigdha, Guru Guna; Ushna Veeerya, and Madhura Vipaka. It has Tridoshaghna, Vayasthapana, Ayushya, Deepana, Malashodana, Raktashodana, Rasayana, Varnya, Balya, Medhya, Hrdya, and Chaksushya properties, and it is effective on Pandu, Kamala, Aruchi, Hrdroga and Agnimandya. Ghee is mainly composed of Madhura Rasa; Snigdha, Mrudu and Guru Guna; Sheeta Veeerya and Madhura Vipaka. It has Balya, Medhya, Rasayana, Vrushya, Raktashodana, Agnideepana, Vayasthapana, Malabaddhahara, Chaksushya and Vishahara properties, and it is effective on Pandu, Kamala, Rattapitta, Udhgara and Adhmana. Bee honey is mainly composed of Madhura, Kashaya Rasa, Guru, Sheeta, Snigdha Guna; Sheeta Veeerya and Madhura Vipaka, aggravate Vata, alleviate Pitta and Kapha; Yogavahi property and it is effective on low blood pressure, heart diseases, cold & cough, hiccups, stress, weakness, eczema, dermatitis, stomach ulcer, vomiting, diarrhoea, jaundice and arthritis. Discussing the above pharmacodynamic properties of AC, Amurta possesses Tikta Kashaya Rasa and Ushna Veerya, which help to clean the Srotodushti and properly form Dhatu from Anna Rasa. It owns Pittahara properties due to Tikta and Kashaya Rasa; Snigdha Guna and Madhura Vipaka. Hence, Amurta was beneficial in management of diseases occurring vitiation Pitta Dosha. Amurta has Rasayana and Balya properties and increases the quantity of blood, bone marrow and fat. Sheeta and Snigdha Guna of ghee and Madhura, Rasa, Sheeta Veerya and Madhura Vipaka of bee honey act as Pitta Shamaka properties. Ghee is conductive Rasa Dhatu and Ojas due to the properties of Madhura Rasa; Sheeta Veerya; Snigdha and Guru Guna.

According to modern science, Amurta contains high nutritional value, including vitamins B, C, E and minerals of ferrous, copper, calcium and potassium, which are beneficial to increasing the iron content of the blood. It also provides nutrition, promotes health and prolongs lifespan. Vitamin C and B were essential for the formation of haemoglobin in RBC. Vitamin B helped to transport oxygen to body cells and helped to prevent tiredness and weakness of the body. Vitamin E helps to protect the body from damages caused by free radicals, due to its antioxidant property, hepato-protective, immune modulatory and blood purification activities.

Therefore, Amurta Choorna with ghee and bee honey showed significant results in improving PR. Due to its synergistic effect, AC improved subjective as well as objective parameters of PR significantly.

The improvement of Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Nidraluta, Ghaurava, Shiroruk, Aasya-Vairasya, Bhrama, Jvara, Gatra Shoola, Agnimandya, Sadana, Aruchi, Akshikuta Shotha, abnormal Hrada Spandana, Pada Shotha between group A and group B is statistically insignificant (P>0.05). The improvement of Hb% and RBC count between group A and group B is statistically insignificant (P>0.05). The total cumulative relief improvement was observed in 66.7% of patients in Group A and 60% of patients in Group B based on subjective and objective parameters. In the present study, total cumulative relief observed that patients in Guda Haritaki showed more significant results than Amurta Choorna due to enhanced bioavailability of nutrients by Haritaki.

Conclusion

This study revealed that the 61–70 years age group of female patients referred more to PR. The highest incidence observed amongst patients with Mandagni and non-veg diet was high occurrence. The highest value was observed excessive Amla Rasa, followed by Lavana and Katu Rasa. Appetite showed the highest incidence amongst patients with poor appetite. There was less incidence of PR in people who had excessive appetite. Patients based on Koshtha showed that the highest incidence of patients had Krura Koshta and the nature of Jivha indicates that more patients had coated tongue. This showed probably patients with Ama condition with PR. Avara Sara and Avara Satva people were more affected with PR. Abnormal body weight could promote the disease due to accumulating undigested substances. Most patients were related to the Vata-Pitta and Pitta –Kapha Prakurti. Patients had low quantities of Hb% and RBC count. Peripheral smear with Microcytic Hypochromic recognised patients included IDA. PR can be effectively compared with anaemia on the grounds of its similar signs & symptoms.

GH enhanced Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Nidraluta, Ghaurava, Shiroruk, Aasya-Vairasya, Bhrama, Sadana, Gatra Shoola, Agnimandya, Aruchi, Akshikuta Shotha, abnormal Hrada Spandana, Pada Shotha, Jvara, Hb% and RBC count in statistically significant. Haritaki is mainly composed of Madura, Amla, Katu, Tikta & Kashaya Rasa; Laghu, Ruksha, Sara and Ushna Guna and Madhura Vipaka. It especially has Pittagna, Anulomana, Deepana, Pachana, Varnya, Rasayana, Ayushya, Medhya, Pushtikara and Vayasthapana properties. Guda is mainly composed of Madhura Rasa, Laghu and Snigdha Guna. It has Tridoshahara, Ashruprasadana, Rasayana, Hradya, Agnivardhaka, Ruchikara, Shramahara, Balya, Pushtikara and Vrushya properties. GH mainly has a Pittahara effect. It increased the Jataragni and

Dhatvagni to normal levels by correcting the Mandagni. GH has hepato-protective, immune modulatory activity and Ashruk Prasadana properties, it improves the quality of Rakta. It has Rasayana, Balya and nourishes all the Dhatus and increases Ojas. GH has Anulomana property removing the Ama condition. Haritaki contains vitamin C, ferrous and copper. Guda (jaggery) has vitamin C, protein, fat, carbohydrate, energy, iron, calcium and phosphorous. Therefore, GH improved subjective as well as objective parameters of PR significantly.

AC enhanced Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Shiroruk, Aasya-Vairasya, Bhrama, Sadana, Gatra Shoola, Agnimandya, Aruchi, abnormal Hrada Spandana, Akshikuta Shotha, Pada Shotha, Jvara, Nidraluta, Ghaurava, Hb% and RBC count in statistically significant. Amurta is mainly composed of Tikta & Kashaya Rasa; Snigdha, Guru Guna; Ushna Veeerya and Madhura Vipaka. It has Tridoshaghna, Vayasthapana, Ayushya, Deepana, Malashodana, Raktashodana, Rasayana, Varnya, Balya, Medhya, Hrdya and Chaksushya properties. Ghee is mainly composed of Madhura Rasa; Snigdha, Mrudu and Guru Guna; Sheeta Veeerya and Madhura Vipaka. It has Balya, Medhya, Rasayana, Vrushya, Raktashodana, Agni Deepana, Vayasthapana, Malabaddhahara, Chaksushya and Vishahara properties. Bee honey is mainly composed of Madhura, Kashaya Rasa; Guru, Sheeta, Snigdha Guna; Sheeta Veeerya and Madhura Vipaka, aggravate Vata, alleviate Pitta and Kapha. Hence, Amurta, followed by ghee and bee honey, was beneficial in the management of diseases occurring in vitiation Pitta Dosha. Amurta contains high nutritional value, including vitamins B, C, E and minerals of ferrous, copper, calcium and potassium, which have beneficial antioxidant properties, hepato-protective, immune modulatory and blood purification activities. Therefore, Amurta Choorna with ghee and bee honey improved subjective as well as objective parameters of PR significantly.

The present study was observed that both Guda Haritaki and Amurta Choorna are beneficial in treating PR. The improvement of Panduta, Daurbalya, Ayasaja Shvasa, Pindikodveshtana, Nidraluta, Ghaurava, Shiroruk, Aasya-Vairasya, Bhrama, Jvara, Gatra Shoola, Agnimandya, Sadana, Aruchi, Akshikuta Shotha, abnormal Hrada Spandana, Pada Shotha, Hb% and RBC count compared between group A and group B is statistically insignificant. The total cumulative relief markedly improvement was observed in Group A than Group B based on subjective and objective parameters. Therefore, Guda Haritaki showed more significant results than Amurta Choorna due to the enhanced bioavailability of nutrients by Haritaki. These findings may be validated in future

research by using analytical studies to evaluate the mode of action of these drugs.

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