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Evaluation of Haemopoietic Activity of the Rhizome of *Corallocarpus epigaeus* Benth. Ex Hook - A Pilot Study

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Abstract *Corallocarpus epigaeus* is indigenously known as *Aagasakarudan*. Rhizomes are having many traditional claims including *Paandu Rogam*. This study is a quasi-experimental study. In this study, ten volunteers with iron deficiency anaemia were selected and treated with root of *C. epigaeus Choornam* in the capsular form for eight weeks. Evaluation visit were made at every weeks and signs and symptoms were recorded using 5 point likert scoring pattern. Serum haemoglobin was recorded before treatment, end of 4th and 8th weeks after treatment using sahli method. Clinical study showed, at the end of 8th week average haemoglobin was increased from haemoglobin concentration 103 g/l to 129.89g/l and also significant reduction in degree of sign and symptoms. Based on this study *C. epigaeus* rhizome provided significant improvement on haemoglobin concentration and the *Choornam* is effective to relieve the signs and symptoms of *Pandu Rogam* like Exertional tiredness, Palpitation, Paleness and Tachycardia.
Keywords *Corallocarpus epigaeus; paandu rogam; haemopoietic activity; quasi experimental study*

1. Introduction

This is a quasi-experimental study to determine the internal administration of "*kollan kovai kizhangu*" (*Corallocarpus epigaeus*) Choornam in the management of iron deficiency anaemia patients.

Anaemia is defined as low hemoglobin concentration <135g/l for men and <115g/l for women (Murray longmore, 2014). Iron deficiency anaemia develops when there is inadequate iron for hemoglobin synthesis (Murray longmore, et al., 2014). Iron deficiency is a very common nutritional disorder worldwide and is known to affect approximately one third of the global population (WHO). It has affected 24.8% of the world's population. When anemia prevalence is 20–39.9% of the general population, it is considered as a moderate public health problem by WHO (The World Bank, 2007). In Sri Lanka, anemia has become a moderate public health problem among preschool, non-pregnant, and pregnant populations as the prevalence is 15.1% (Renuka Jayatissa, 2014), 39%, and 34%, respectively (Vidyaratne, 2011).

Clinical features of *Paandu Rogam* can compare with the clinical features of iron deficiency anemia. The sign and symptoms of anemia are similar to the symptoms describe in *Paandu* in *Siddha* such as Paleness, Giddiness, Exertional Tiredness, Dyspnea, Palpitation etc. With the aim that herbo-mineral medicines may be effective to manage iron deficiency anemia without any side effects, the plant has been chosen.

Corallocarpus epigaeus Benth ex Hook (Cucurbitaceae) is a prostrate or climbing monoecious plant found in tropical countries like Sri Lanka India, Deccan and South Maratha (Jayaweera, 2006). The plant is indigenously known as *Aagasakarudan* (Murugesa muthaliyar, 2008). The plant contains chemicals like alkaloids, flavonoids, phenols, tannins, steroids, saponins, glycosides, terpenoids (Priyavardhini et al., 2012) carbohydrates, mucilages, proteins and amino acids (Nisha Shri et al., 2010). *C. epigaeus* has several medical claims such as analgesic, anti-inflammatory, adaptogenic (Gupta, 1994) anti-allergic, antimicrobial and anticancer activity (Aiyelaagbe & Osamudiamen, 2009), hypotensive effects (Matsubara et al., 1985) and antioxidant (Jayaseelan et al., 2014) properties.

Even though the plant has good therapeutic use and traditional claims for *Paandu rogam*, till now no scientific study was available to prove activity of *C. Epigaeus* on *Paandu rogam.* Hence, the present study deals Evaluation of haemopoietic activity of the *Corallocarpus epigaeus* Benth. ex Hook rhizome.

2. Objectives

A. *General objective*
To determine the haemopoietic activity of the *Corallocarpus epigaeus* Benth ex Hook rhizome.
B. *Specific objective*
To find out the effectiveness of the tested drug in the management of *Paandu.*

3. Methodology

A. Patient Selection

Sample size of this study was ten volunteers. Volunteers between 20 to 50 years of age, both sexes presenting with the signs and symptoms of anemia were selected on randomization schedule from “Konesapuri” area. Full blood count report and blood picture were obtained from authenticated medical laboratory at Trincomalee to conform the diagnosis, out of selected volunteers, ten volunteers were selected based on inclusion and exclusion criteria.

a) Inclusion criteria
Iron deficiency anemia
Age group 20-50y
Sex- both sexes
Any of following clinical features given below with reduced hemoglobin
Pale
Tachycardia
Exertional tiredness
Palpitation
Dyspnea
Hb level <13.5 g/dl (<135 g/L) in men, and <11.5g/dl (<115 g/L) in women.
Hb level above 8g/dl in both men and women
Blood picture- microcytic hypochromic RBC
Patient those who willing

b) *Exclusion criteria*

Pregnant mothers
Feeding mothers
Patients with other drug treatment
Age below 20y and above 60y
Patients with severe anemia (Hb concentration below 8g/dl)
Other type anemia

c) *Preparation of volunteers*

The selected volunteers were interviewed on their first visit. They were assurance that all information obtain from them and Drug, dose, duration about study and proper diet and regiments according to the study, which were explained to the volunteers and written concern was obtained from them.

B. Plant Collection and Preparation of Medicine

Fresh and healthy plant root of *C. epigaeus* were collected from Trincomalee district and plant was authenticated by Gunapadam, pharmacognacy division. The sand and external particles were removed from the root. Then it was washed thoroughly, outer covering was removed and purified in milk.

General rule of method of preparation of *Choornam* were adapted (Narayanaswami, 1995). The purified root was cut into small pieces and dried out under sunshade then it was bruised well & stained through fine meshes of sieve. The *Choornam* was filled in 500mg capsule.

Figure 1: *C. epigaeus Choornam*

Figure 2: *capsule*

C. Clinical Assessment

Selected volunteers were examined based on standard clinical case sheet. Symptoms specific for iron deficiency anemia were recorded in data sheet using likert scale mentioned below. This scale measures the level of symptoms that is relative just to the individual sufferer.

Table 1

Symptoms	scoring	
Exertional tiredness	Always	5
Palpitation	Often	4
Giddiness	Some time	3
Breathlessness	Rare	2
Chest pain	Never	1
Sleepiness		

The volunteers were subjected to a detailed clinical examination. Observed objective parameters which are closely related to iron deficiency anemia were analyzed using following scoring pattern.

Table 2

Sign	Scoring	
Pale	Never	0
Angular stomatitis	Mild	1
Bold tongue	Moderate	2
Brittle nail	Sever	3
Heart rate	<80 bpm	0
	80-90 bpm	1
	90-100 bpm	2
	>100 bpm	3

A total volume of 2 ml of venous blood was obtained from each participant into EDTA (Ethylene Diamine Tetra Acetic acid) containers for hemoglobin measurement. Universal precautions were followed during blood collection, transportation, storage, and disposal to protect the participants as well as the researchers.

Blood hemoglobin concentrations of the participants were measured using sahli method in authenticated medical laboratory at Trincomalee to conform the diagnosis.

D. Intervention

Selected patients were treated with capsulized *choornam* of *kokollan kovai kizhangu* in dose of 1g (2 capsule) 6 hourly orally.

E. Study Period

Study was conducted for 8 weeks.

F. Method of Data Analysis

Evaluation visit were made at end of 1st, 2nd, 3rd, 4th, 5th 6th, 7th & 8th weeks from the registration. The patient's signs and symptoms were recorded before treatment and at every visit after the treatment with likert scoring pattern depending upon their severities.

Serum hemoglobin Changes was evaluated by calculation of serum Hb before treatment, 4th and 8th week after treatment. Improvement of Hb was determined by following manner to this study; mild improvement determined by the range of 1-15g/l increased Hb, moderate significant improvement determined by the range of 16 - 30g/l increased Hb and marked significant improvement determined by increased Hb >30g/l.

Effect of drug was evaluated based on changes in the subjective and objective parameters mainly based on clinical observation by grading methods and hemoglobin value before treatment & after treatment using Microsoft excel 2007.

4. Results

Results of clinical trials were considered in 9 volunteer, one was dropped.

A. Effect of Drug on Haemopoietic Activity

Figure 3 shows Hemoglobin concentration of each volunteer over subsequent visit. Figure 4 shows mean hemoglobin concentration before treatment and after 4th and 8th weeks of treatment and Table 3 shows Summary finding of haemopoietic activity

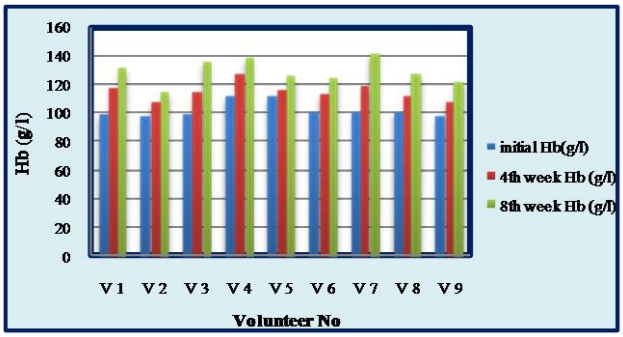

Figure 3: *Hemoglobin concentration of volunteers over subsequent visit*

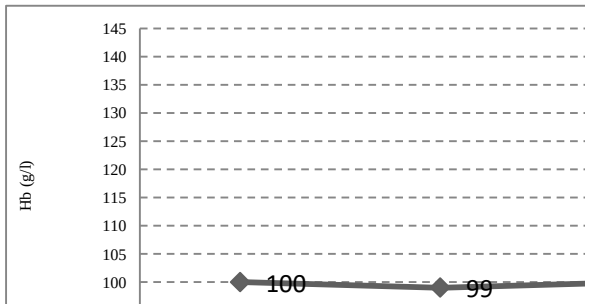

Figure 4: *Mean Hb value over subsequent visit*

Table 3: *Summary finding of haemopoietic activity*

		improvement			
		No	Mild (increased Hb by 1-15g/l)	Moderate (increased Hb by 16-30g/l)	Marked (increased Hb by >30g/l)
BT- 4th week AT	Pt No	**0**	**6**	**3**	**0**
	% of total	**0%**	66.66%	33.33%	**0%**
BT- 8th week AT	Pt No	**0**	**1**	**5**	**3**
	% of total	**0%**	11.11%	55.55%	33.33%

(Pt No: number of patients)

Based on these results, at end of 8th week average hemoglobin was increased from hemoglobin concentration 103 g/l to 129.89g/l scilicet at end of 8th week mean increased Hb was 26.88. Summary finding of haemopoietic activity revealed that After 8 weeks treatment 1 volunteer (11.11%) shown

mild improvement, 5 volunteers (55.55%) shown moderate significant improvement and 3 volunteers (33.33%) were shown marked significant improvement.

B. Effect of Drug on Sign and Symptoms

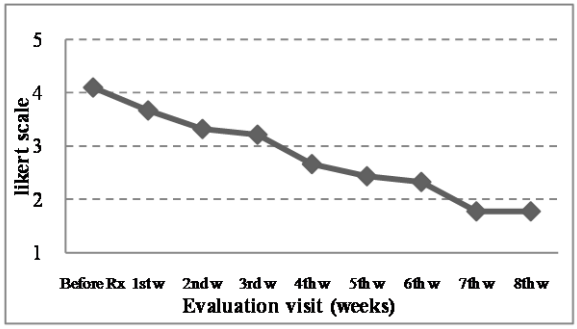

Figure 5: *Mean change in exertional tiredness over subsequent visit*

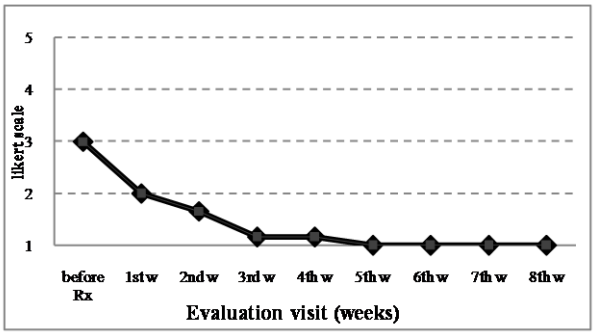

Figure 6: *Mean change in palpitation over subsequent visit*

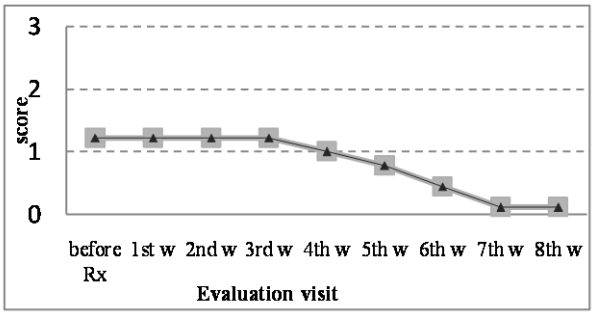

Figure 7: *Mean change in paleness over subsequent visit*

Table 4: *effect of therapy on heart rate*

Heart rate		(<80)	(81-90)	(91-100)	(>100)
Before treatment	Pt No	2	3	3	1
	% of total	22.22%	33.33%	33.33%	11.11%
After treatment	Pt No	9	0	0	0
	% of total	100%	0%	0%	0%

5. Discussion

According to this clinical study, Corallocarpus epigaeus rhizome Choornam on Pandu Rogam with special reference to iron deficiency anemia showed moderately significant result in improving hemoglobin concentration and significant result in the relieving of symptoms like Exertional tiredness, Palpitation, Paleness and Tachycardia.

Effectiveness of drug is discussed on the basis of *suvai, Veeriya, Vipaka*, action and properties of selected plant.

According to Siddha medicine, *Paandu Rogam* is as a problem arising due to the reduction of *Pitham* specially *Ranjaka Pitham* and aggravation of *Kapham* (Rajeswari, 1983). Therefore the trial drug should be has the property of normalizing *pitham* and *kapham*. *C. epigaeus* has bitter taste (Murugesa muthaliyar, 2008), it helps to normalizing the *Azhal Dosha* and also Bitter taste has got *Deepana* (facilitate digestion)*, Pachana* (augment digestion) properties (Shanmugavelu, 2009), this helps to treat iron deficiency due to digestion and absorption problem.

The plant is *ushna veeriyam* and pungent *vipakam*. *ushna veeryam* and pungent *vipakam* aggravates *pitham*, has the property of pacify *kapham* and also improve digestive fire (Anaivaari, et al., 2005).

Plant has the action like tonic and alterative actions (Murugesa muthaliyar, 2008). Which helps to alleviate weakness occur in pandu rogam and strengthen the body. *C. epigaeus* also has the property of Anthelmintic, anti-inflammatory, anti-microbial activities (Aboaba et al., 2001) (Ramkumar, et al., 2007) (Shri Vijaya Kirubha et al., 2011) this may help to treat causes of iron deficiency anemia likes worm infestation, gastritis and other inflammatory condition of gastro intestinal tract and menorrhagia due to pelvic inflammatory diseases.

Therefore stanza for *Corallocarpus epigaeus* mentioned in Gunapadam text was scientifically proved through this study.

6. Conclusion

According to this clinical study, following conclusion can be drawn. *Corallocarpus epigaeus* rhizome *Choornam* provided moderate significant improvement on hemoglobin concentration. The Choornam is effective to relieve the signs and symptoms of *Pandu Rogam* like Exertional tiredness, Palpitation, Paleness and Tachycardia.

Among the general character of C. epigaeus quoted in *Gunapadam* text, *Paandu Rogam* is proven scientifically from this study.

References

Aboaba, O.O., and Efuwape, B.M. Antibacterial properties of some Nigerian species. *Bio. Res. Comm.* 2001. 13; 183-88.

Aiyelaagbe, O.O., and Osamudiamen, P.M. Phytochemical screening for active compounds in Mangifera indica leaves from Ibadan, Oyo state. *Pl. Sci. Res*. 2009. 2; 11.

Anaivaari Anandan, R., 2005: *A compendium of siddha doctrine*. 1st ed. Chennai: Dept. of Indian Medicine & Homeopathy, Chennai.

Gupta, S.S. Prospects and perspectives of natural plant products in medicine. *Ind. J. Pharmacol.* 1994. 26; 1-12.

Jayaseelan, M., Arumugam, T., and Thangaraj, N. Evaluation of antioxidant and anti-inflammatory activities of Corallocarpus epigaeus (Hook. F.) rhizomes. *Int J Pharm Biomed Res*. 2014. 5 (1).

Jayaweera, D., 2006: *Medicinal Plants (Indigenous & Exotic) Used in Ceylon*. Vol. 2. Colombo, Sri Lanka: The National Science Foundation of Srilanka.

Matsubara, Y., Kumamoto, H., and Iizuka, Y. Structure and hypotensive effect of flavonoid glycosides in Citrus unshiu peelings. *J. Agri. Biol. Chem.* 1985. 49 (4).

Murray longmore, I.B., 2014: *Oxford Hand Book of Clinical Medicine*. 9th ed. India: Oxford University Press.

Murugesa Muthaliyar, K., 2008: *Siddha Material Medica, Medicinal Plants Division*. 2nd ed. India: Maruthuvam Homeopathy Chennai.

Narayanaswamy, V., 1995: *Pharmacopia of Hospital of Indian Medicine, Siddha*. 2nd ed. Tamilnadu Siddha Medical Board, Madras.

Nisha Shri C., Balaji, J., Venkatramanan, S., and Madhumathi, K.L. Pharmacognostical and preliminary phytochemical screening of the root and rhizome of Corallocarpus epigaeus. *Int J Pharm Biomed Res.* 2010. 2.

Priyavardhini, S., Vasantha, K., Tresina Soris, P., and Mohan, V.R. Efficacy of phytochemical and antibacterial activity of Corallocarpus epigaeus Hook.f. *International Journal of PharmTech Research*. 2012. 4; 35-43.

Ramkumar, K.M., Rajaguru, P., and Anantham, R. Antimicrobial properties and phytochemical constituents of an antidiabetic plant Gymnema montanum. *Adv. Biol. Res.* 2007. 1; 67-71.

Renuka Jayatissa, 2014: *Iron Deficiency in Sri Lanka*. Sri Lanka: UNICEF.

Shanmugavelu, D., 2009: Noi nadal Noi muthal nadal thiraddu. 1st ed., Vol. Part 1. India Maruthuvam Homeopathy Chennai.

Shri Vijaya Kirubha, Senthamarai, R., Vasuki, K., Venkateswara Rao, A., and Selvadurai, S. Anthelmintic activity of roots and rhizomes of Corallocarpus Epigaeus. *Journal of Natural Product Plant Resource.* 2011. 1 (1).

The World Bank, 2007: Malnutrition in Sri Lanka: Scale, Scope, Causes and Potential Response. Other Health Study, South Asia Region, Washington, DC, USA.

Vidyaratne, D., 2011: Prevalence of Anaemia among Children and Women. Demographic and Health Survey 2006/7. Health Sector Development Project, Department of Census and Statistics, Ministry of Healthcare and Nutrition, Sri Lanka.

Important of Medicinal Plant. www.Botanical-online.com