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A Comparative Clinical Study to Evaluate the Efficacy of *Panchasama Churna* and *Erand Paka* in the Management of *Amavata* w.s.r. to Rheumatoid Arthritis

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ABSTRACT:

Background *:* *Amavata* (Rheumatoid arthritis) is one of the chronic diseases mainly affecting the joints with pain of severe degree being the main symptom with progressive destruction of the joints with crippling and deformities, arthritis poses an unavoidable clinical situation and prolonged morbidity warranting an active care. *Ama* and *Vata* are the two main pathognomic factors held responsible for causation of *Amavata*. Derangement of *Agni* that is *Agnimandya* is a chief factor responsible for the formation of *Ama*, which is main pathological entity of the disease. The etiological factor for both vitiation of *Vata* and formation of *Ama* are responsible for the manifestation of the disease

Aim and Objectives: To evaluate and compare the effects of *Panchasama Churna* and *Erand Paka* in the Management of *Amavata* w.s.r. To Rheumatoid Arthritis.

Materials and Methods : 30 patients of *Amavata* was selected from OPD and IPD of Lal Bahadur Shastri Mahila Ayurvedic College & Hospital, Bilaspur District Yamuna Nagar (Haryana) . Patient who was fulfilling the criteria for diagnosis and inclusion was included in this study irrespective of sex, caste, religion etc

Result*:* *Panchasama Churna* i.e. Group A provided mild improvement in 100% of the patients after completion of treatment. *Erand Paka* i.e. Group B provided marked relief in 10% of the patients, moderate response in 30% of the patients and 60% of the patients were showed mild improvement. Combined effect of *Panchasama churna* and *Erand Paka* i.e. Group C provided marked relief in 10% of the patients, moderate response in 70% of the patients and 20% patients showed mild improvement after completion of the treatment. No patient got complete cure and was found unchanged/no response in all the groups.

Keywords : *Amavata*, Rheumatoid Arthritis, *Samshaman*, *Panchasama*

INTRODUCTION

In Ayurveda this disease described as *Amavata*, first in Madhav Nidan. This disease is dominated pathologically by *Ama* and *Vata*. Due to different causative factors there is improper metabolism of food which results formation of an intermediate product which is toxic in nature known as *Ama*. This *Ama*, if not excreted from the body, it absorbed in the body and produce pain, inflammation and stiffness in joints. Rheumatoid Arthritis (R.A.) is a chronic systemic inflammatory disease of unknown cause, chiefly affecting synovial membranes of multiple joints. The disease has a wide clinical spectrum and considerable variability in joints and extra-articular manifestations. *Amavata* is a disease which is not stated in Brihattrayee as a separate chapter. It was described by Madhavakara in 9th Century AD with well defined etiopathogenesis and clinical presentation with specific emphasis on *Mandagni* and *Ama* playing the central role. This condition is strikingly comparable to Rheumatoid Arthritis as known today. Excessive consumption of *Nidana* of *AmaVata* in pre-existing stage of *Mandagni* leads to formation of *Ama* and simultaneous vitiation of *Tridosha*[1], especially the *Vata Dosha*[2]. The samprapti originates initially from the *Annavaha Srotasa*[3] and in due course spreads to the other *Srotasa* mainly *Rasavaha, Asthivaha*[4] and *Majjavaha Srotasa*. The *Dusyas* mainly involved in this disease are *Rasa, Mansa, Asthi* and *Majja*. It is mostly the disease of *Madhyama Roga Marga* with *Chirakari Swabhava.Sandhi* is the main site of *Abhivyakti*[5] of *Lakshana. Ama*, under influence of vitiated *Vata*, comes in *Sleshamasthana*[6] mainly in *sandhis* and gets lodged there. *Sandhishoola*[7], *Sandhishotha*[8], *Stabdhata* and *Sparshasehatva*[9] are the cardinal features of *Amavata*. The disease runs a chronic course of *Jadya, Sankocha, Angavaikalya Mansakshaya*[10] etc. are responsible for crippling of the patients. Other constitutional symptoms like *Alasya, Aruchi, Balabhransha*[8], *Vivandha, Apakti* etc. are normally found in the patients of *Amavata*.

Chakrapani was the pioneer of lay down the principle and line of treatment of *Amavata*. *Rukshasweda*[11] and *Upnaha*[12] were added afterward by Bhavaprakasha and Yogaratnakar to the measures mentioned by Chakrapani. *Ama* and *Vata* are the two chief pathognomic factors in production of *Amavata*. *Ama* is *Guru, Snigdha*[13], *Sthira, Sthula* and *Pichhila* while the *Vata* have the properties like *Laghu Ruksha, Chala, Sukshama*[14] and *Vishada*[15]. The properties of *Ama* and *Vata* lie on opposite pole of each other. Only the *Sheeta Guna*[16] is common to both. These are the things which come in across while treating the *Amavata*, because any measure adopted was principally oppose one another. So, a very careful approach can only benefit the patient. The line of treatment laid down by Chakrapani denotes firstly the *Pachana* of *Ama*, then restoration of *Agni* and finally control of *Vata Dosha*.

Panchasama Churna has been specifically mentioned for the treatment of *Amavata*. It comprises of *Shunthi* (Zingiber officinalis), *Haritaki* (Terminalia chebula), *Krishna* (Piper longum), *Trivrit* (Operculina turpethum) and *Saurvachala lavana* (Sochal salt) are having *Vata-kapha shamaka, Agnideepana, Pachana, Srotovishodhana* and *Vatanulomaka* properties. In Yogratnaka *Vatavyadhi Chikitsa* described *Erand Paka* has been mentioned in the treatment of *Vata* diseases. *Erand Paka* (Ricinus communis) balances *Vata dosha* mainly used in the treatment of *Vata* diseases, inflammation, rheumatoid disorder, Low backache, spondylosis etc. *Erand Paka* in which *Trikatu* is effective for *Ama* which is the prime cause for *Amavata* and Chaturjata *having ruksha, teekshna, laghu guna and ushna veerya* improves appetite and promotes digestion & *Triphala*[17] pacifies *Vata vikar*[18] and cleanses the digestive tract. It aids elimination and purification. It tones and strengthens the digestive tract and promotes regular and completes the evacuation of the bowels. It helps with the digestion and assimilation of food, improves blood circulation and has anti-inflammatory properties. Therefore there is a need to evaluate the efficacy of *Panchasama Churna* and *Erand Paka* in the management of *Amavata.* Thus considering above facts this study "A comparative clinical study of *Panchasama Churna* and *Erand Paka* in the management of *Amavata* w.s.r. to Rheumatoid Arthritis" was carried out to understand the effect of herbal drugs in the management of *Amavata.*

MATERIAL AND METHODS

Ethical clearance:

Subjects were randomly selected from the outpatient department of of Lal Bahadur Shastri Mahila Ayurvedic College & Hospital, Bilaspur District Yamuna Nagar (Haryana) Study was started after obtaining Ethical Clearance from Institutional Ethical Committee, vide certi No. DBU/RC/241 Dated 08/04/2017

Research Methodology

The research study entitled "A Comparative Clinical Study to Evaluate the Efficacy of *Panchasama Churna* and *Erand Paka* in the Management of *Amavata* w.s.r. to Rheumatoid Arthritis" is a randomly selected comparative clinical study

to find the effectiveness of *Panchasama Churna* and *Erand Paka* in *Amavata* w.s.r. to Rheumatoid Arthritis.

Source of Data

- 30 patients of *Amavata* was selected from OPD and IPD of Lal Bahadur Shastri Mahila Ayurvedic College & Hospital, Bilaspur District Yamuna Nagar (Haryana)
- Patient who are fulfilling the criteria for diagnosis and inclusion was included in this study irrespective of sex, caste, religion etc.

Inclusion Criteria

1. Patients with classical features of *Amavata* explained in texts.
2. Patients of any socio-economic status, both sexes and all ethnic origins.
3. Patients with age group of 20-60 years.
4. Fresh cases of Amavata

Exclusion Criteria

1. Patients with uncontrolled metabolic and other systemic disorders.
2. Chronic cases with permanent deformity for more than 10 years
3. Age less than 20 years and more than 60 years

Withdrawal Criteria

1. Personal matters
2. Aggravation of complaints
3. Inter current illness
4. Any other difficulties
5. Leave against medical advice

Criteria for Selection of Drug

1. ***Panchasama Churna*** **-** In Sharangadhara Samhita, Madhyam Khanda, Adhyaya 6:93-94 1/2 *Panchasama Churna* has been mentioned in the treatment of *Amavata*. It contains *Shunthi* (Zingiber officinalis), *Haritaki (*Terminalia chebula*), Krishna (*Piper longum*), Trivrit (*Operculina turpethum*) and Saurvachala lavana (Sochal salt).* Also, the raw drugs are easily available and low cost compared to other therapy. Hence, these drugs was selected for research study. (TABLE 1)

   Treatment Schedule: Churna – 3g along with warm water twice a day after food.
2. ***Erand Paka* –** In Yogratnaka *Vatavyadhi Chikitsa* 468 *Erand Paka* has been mentioned in the treatment of *Vata* diseases. It contains *Vatari Beeja (*Ricinus communis*), Ksheera (*Cow milk*), Ghrita (*Cow ghee*), Khand (*Sugar candy*), fine powder of Shunti (*Zingiber officinalis*), Maricha (*Piper nigrum*), Pippali (*Piper longum*), Twak (*Cinnamomum zeylanicum*), Patra (*Cinnamomum tamala*), Nagakeshara (*Mesua ferrea*), Chitraka (*Plumbago zeylanica*), Pippali mool (*Piper longum*), Chavya* (Piper chaba*), Dhanyaka (*Coriandrum sativum*), Mishreya Shati (*Curcuma zeodaria/Hedychium spicatum*), Bilva (*Aegle marmelos*), Dipyaka (*Trachyspermum roxburghianum*), Jiraka (*Cuminum cyminum*), Krishna jiraka (*Nigella sativa*), Haridra (*Curcuma longa*), Daruharidra (*Berberis aristata), *Ashwagandha (*Withania somnifera*), Bala (*Sida cordifolia*), Hapusha (*Juniperus communis*), Vidaga (*Embelia ribes), *Pushkara* (Inula racemosa*), Kushta (*Saussurea lappa*), Haritaki (*Terminalia chebula*), Vibhitaki (*Terminalia bellirica*), Daru (*Cedrus deodara*), Vellari (*Commiphora myrra*) Shatavari (*Asparagus racemosus*)(*TABLE 2*).*

   Treatment Schedule – Paka 5-10 gm along with warm water/milk twice a day after food

DIAGNOSTIC CRITERIA:-

Patients having general features of *Amavata* like *Angamarda, Aruchi, Trishna, Alasya, Gaurava, Klama*[19], *Apaka, Jwara* and localised symptoms related to joints.

The base of criteria led down by American Rheumatism Association was also taken into consideration as follows –

* Early morning stiffness > 1 hour
* Arthritis of three or more joints
* Arthritis of hand joints
* Symmetrical arthritis
* A positive serum Rheumatoid Factor (R.A. Test)
* Typical Radiological changes

Diagnosis of Rheumatoid Arthritis made with 4 or more criteria.

Diet Regimen - While prescribing the diet of the patients, concept of *Pathya-Apathya* related to *Ama* was kept in mind; light diet was advised as per the status of *Agni*.

Research Design: It is an observational clinical study, patients was assign into three group consisting of 10 patients each excluding dropouts with pre, mid and post test study design. The patients was allocated through the use of ballots or coin toss.

Group A – Patients was treated with *Panchasama churna*

Group B – Patients was treated with *Erand Paka*

Group C – Patients was treated with *Panchasama churna* and *Erand Paka*

Duration of study – 60 days

Assessment and follow up – The assessment of the patients was done at the interval of 15 days, 30days, 45 days and the follow up was done two month after completion of treatment.

Criteria for Assessment

The assessment was made before and after the treatment on scoring of signs and symptoms of *Amavata*. Results was analyzed statistically as per the assessment chart.

Instrumentation: Scoring pattern was developed according to severity of symptoms.

Symptoms related to joints -

Joint Pain -

0 : No pain

1 : Mild pain of bearable nature, comes occasionally

2 : Moderate pain, but no difficulty in joint movement

3: Severe pain, difficulty in joint movement

Swelling of the joint –

0: No swelling

1 : Slight swelling

2 : Moderate swelling

3 : Severe swelling

Tenderness of the joints –

0 : No tenderness

1 : Subjective experience of tenderness

2 : Wincing of face on pressure

3 : Resist to touch

Stiffness of the joint -

0 : No stiffness or stiffness lasting for 5 min

1 : Stiffness lasting for 5 min to 2 hours

2 : Stiffness lasting for 2 to 8 hours

3 : Stiffness lasting for more than 8 hours

Shifting of joint pain –

0 : No shifting of joint pain

1: Occasional shifting of joint pain

2 : Mild shifting of joint pain

3 : Moderate shifting of joint pain

Warmth of the joint –

0 : Normal temperature

1 : Mild temperature

2 : Moderate temperature

3 : Raised temperature when compared to the normal

Restriction of movements of the joint –

0 : No restriction of joint movement

1 : Mild restriction of joint movement

2 : Moderate restriction of joint movement

3: Complete restriction of joint movement

Other symptoms score –

0 : No change

1 : Symptoms present before starting the treatment

2 : Any improvement in symptom after the treatment

3 : Complete remission of symptom after treatment

Other symptoms are *Jwara* (Fever), *Shirshool* (Headache), *Nidranasha* (Insomnia), *Kandu* (Itching), *Daha* (Burning sensation), *Stemitya*, *Bahumutrata* (Polyurea), *Brahm* (Vertigo), *Hridayagraha*, *Angagraha*, *Gaurav* (Heaviness), *Alasya* (Drowsiness), *Mukhaprasek* (Stomatitis), *Aruchi* (Anorexia), *Trishna* (Thirst), *Kshudhanasha* (Loss of appetite), *Chardi* (Vomiting), *Antrakujan*, *Vibandha* (Constipation), *Kukshishool* (Backache), *Anaha.*

Functional Assessment –

1. Walking Time – Time taken to walk a distance of 8 Metres
   0 : 15-20 sec.
   1: 21-30 sec.
   2: 31-40 sec.
   3: > 40 sec.
2. Grip strength – ability to compress an inflated ordinary sphygmomanometer cuff
   0 : 200mmHg or more
   1: 199-120 mmHg
   2: 119-70 mmHg
   3: under 70 mmHg

3. Foot pressure – ability of patients to press a weighing machine
   0 : 25 -21 kg
   1: 20 -16 kg
   2: 15 -10 kg
   3: < 10 kg
4. General functional capacity
   0: Complete ability to carry on all routine duties
   1 : Adequate normal activity despite slight difficulty in joint movement
   2 : Few activities are persisting but patient can take care of himself
   3 : Few activities are persisting and patient requires an attendant to take care of himself/ Patients are totally bed ridden

Pathological Investigations – C-reactive protein (CRP), Erythrocyte Sedimentation Rate (ESR), Rheumatoid Factor (RF) and Antinuclear Antibody (ANA), Anti-cyclic citrullinated (anti-CCP)

Radiological Investigations – X-ray, Joint aspiration to rule out other pathological conditions.

Assessment of total effect: The total effect of therapy was assessed as;

Assessment	**Score**
Complete cure	100%
Marked Relief	>75 to 99%
Moderate Response	>50 to 75%
Mild Improvement	>25 to 50%
No response	0-25%

OBSERVATIONS & RESULTS

The observation of patients was carried out before, during and after completion of treatment. "A Comparative Clinical Study to Evaluate the Efficacy of *Panchasama Churna* and *Erand Paka* in the Management of *Amavata* w.s.r. to Rheumatoid Arthritis"**'** was carried out in 30 patients selected from the OPD & IPD of Lal Bahadur Shastri Mahila Ayurvedic College & Hospital, Bilaspur District Yamuna Nagar (Haryana).The 30 patients were divided in three groups (10 patients each), irrespective of any socio-economic status, all ethnic origins, fulfilling the criteria of diagnosis and inclusive criteria. All patients were diagnosed on the basis of the signs and symptoms of *Amavata* (Rheumatoid Arthritis). Physical local examinations & laboratory investigation of each patient were performed. All the patients were examined before, during and after the trail, according to the case sheet format given in the annexure. The scoring of clinical features was recorded. Graph 1

The Statistical Analysis of the clinical parameters of Group A, Group B, Group C as:-

(TABLE -3) The total effect of treatment on localized symptoms of each patient was evaluated before and after completion of the treatment. In Group A, the initial mean score of 10 patients for *Sandhishoola* was 2.60 which were reduced to 1.40 after treatment. The total effect of treatment provided statistical significant (P<0.01) result with 't' value of 3.84. In symptom *Sandhishotha*, the mean before treatment was 2.56 which was reduced to 1.56, exhibiting highly significant (P<0.001) improvement with 't' value of 4.02. In symptom *Sandhiraga*, the mean before treatment was 2.11 which was reduced to 1.00, exhibiting highly significant (P<0.001) improvement with 't' value of 5.55. In *Sandhijadhyata*, the mean before treatment was 2.22 which was reduced to 1.22 after treatment. The total effect of treatment provided statistical significant (P<0.001) result with 't' value of 4.81. In symptom *Sancharivedana,* the mean before treatment was 2.88 which was reduced to 1.75, exhibiting highly significant (P<0.001) improvement with 't' value of 5.46. In symptom *Ushna-sparshasahatva,* the mean before treatment was 2.22 which was reduced to 1.11, exhibiting statistical significant (P<0.001) improvement with 't' value of 3.24. The initial mean score for *Sandhikaryahani* was 2.25 which were reduced to 1.25 after treatment. The treatment provided highly significant (P<0.001) result with 't' value of 4.32 after completion of the treatment.

(TABLE-4) The total effect of treatment on localized symptoms of each patient was evaluated before and after completion of the treatment. In Group B, the initial mean score of 10 patients for *Sandhishoola* was 2.80 which were reduced to 1.20 after treatment. The total effect of treatment provided highly significant (P<0.001) result with 't' value of 6.66. In symptom *Sandhishotha*, the mean before treatment was 2.50 which was reduced to 1.10, exhibiting highly significant (P<0.001) improvement with 't' value of 5.72. In symptom *Sandhiraga*, the mean before treatment was 2.25 which was reduced to 1.25, exhibiting statistical significant (P<0.01) improvement with 't' value of 3.35. In *Sandhijadhyata*, the mean before treatment was 2.20 which was reduced to 1.00 after treatment. The total effect of treatment provided statistical significant (P<0.001) result with 't' value of 6.00. In symptom *Sancharivedana,* the mean before treatment was 2.22 which was reduced to 1.00, exhibiting statistical significant

(P<0.01) improvement with 't' value of 3.89. In symptom *Ushna-sparshasahatva*, the mean before treatment was 2.22 which was reduced to 1.00, exhibiting statistical significant (P<0.01) improvement with 't' value of 3.35. The initial mean score for *Sandhikaryahani* was 2.00 which were reduced to 0.88 after treatment. The treatment provided statistical significant (P<0.01) result with 't' value of 3.21 after completion of the treatment.

(TABLE-5) The total effect of treatment on localized symptoms of each patient was evaluated before and after completion of the treatment. In Group C, the initial mean score of 10 patients for *Sandhishoola* was 2.60 which were reduced to 1.00 after treatment. The total effect of treatment provided highly significant (P<0.001) result with 't' value of 9.80. In symptom *Sandhishotha*, the mean before treatment was 2.40 which was reduced to 0.90, exhibiting highly significant (P<0.001) improvement with 't' value of 7.83. In symptom *Sandhiraga*, the mean before treatment was 2.33 which was reduced to 0.89, exhibiting highly significant (P<0.001) improvement with 't' value of 7.21. In *Sandhijadhyata*, the mean before treatment was 2.20 which was reduced to 0.70 after treatment. The total effect of treatment provided statistical significant (P<0.001) result with 't' value of 7.40. In symptom *Sancharivedana*, the mean before treatment was 2.44 which was reduced to 1.00, exhibiting highly significant (P<0.001) improvement with 't' value of 8.22. In symptom *Ushna-sparshasahatva*, the mean before treatment was 2.56 which was reduced to 0.89, exhibiting statistical significant (P<0.001) improvement with 't' value of 6.26. The initial mean score for *Sandhikaryahani* was 2.25 which were reduced to 0.88 after treatment. The treatment provided highly significant (P<0.001) result with 't' value of 4.92 after completion of the treatment.

(TABLE-6) The total effect of treatment on laboratory investigations of each patient was evaluated before and after completion of the treatment. In ESR, the treatment provided statistical significant result in all three groups after completion of the treatment. In Group C, 50 % patients show statistical significant relief in RA factor after completion of treatment. Hb% increases up to 0.5 gm in all groups but not statistically significant. TLC is statistical significant in Group C. In DLC slight changes are present.

(TABLE-7) The total symptom score and relief percentage of each *Sandhigata Lakshan* (localized symptom) of all patients of all three groups were evaluated. The relief percentage in individual symptoms of *Amavata* revealed a better therapeutic efficacy of treatment in all the three groups.

(TABLE - 8) The total symptom score and relief percentage of each *Sarvadehik Lakshan* (General symptom) of all patients of all three groups were evaluated. The relief percentage in individual symptoms of *Amavata* revealed a better therapeutic efficacy of treatment in all the three groups.

(TABLE - 9) The total effect of treatment on functional assessment of each patient was evaluated before and after completion of the treatment. In walking time, grip strength, foot pressure and general functional capacity, the treatment provided statistical significant result in all three groups after completion of the treatment.

(TABLE -10) *Panchasama Churna* i.e. Group A provided mild improvement in 100% of the patients after completion of treatment. *Erand Paka* i.e. Group B provided marked relief in 10% of the patients, moderate response in 30% of the patients and 60% of the patients were showed mild improvement. Combined effect of *Panchasama churna* and *Erand Paka* i.e. Group C provided marked relief in 10% of the patients, moderate response in 70% of the patients and 20% patients showed mild improvement after completion of the treatment. No patient got complete cure and was found unchanged/no response in all the groups.

DISCUSSION

In any research study, the prime aim is to help, adjust and advance the current patterns of learning and admit them after appropriate basic investigation. It is conceivable just by sharp examination and exact translation of accessible information. Discussion holds the most crucial position in all exploration as it gives a degree to dissect the subject with rationale and thinking. Henceforth discussion turns into a basic piece of any research work to put this information (think about) on the logical stage and then no one but it tends to be endorsed as a productive report.

Ayurvedic classics provide clear therapeutic guidelines for the treatment of *Amavata*. Namely *langhana, swedana, Tikta - katu - Deepana drugs, Virechana* etc. the treatment is based on *Ama pachana* and amelioration of vitiated *vata*. As the disease is born out from the vitiated *vata* and *kapha*, in this present study we have selected a *shamana yoga* which has a definite action on vitiated *vata kapha dosha*. The total treatment principle of *Amavata* stands on three processes as a) *Ama pachana - by Langhana, Swedana, Pachana, Deepana* b) *Ama/vata Nirharana - by Virechan, Snehapana & Basti c) Agni saramkshana - by Deepana.* Ayurveda has proved to be effective in managing and

preventing chronic ailments till date. Concepts of Ayurveda have been helpful in treating new diseases arising due to changing lifestyles and environment. This study was an attempt to understand the Disease in Ayurvedic concept and find an effective therapy in preventing the disease.

CONCLUSION

Panchasama Churna i.e. Group A provided mild improvement in 100% of the patients after completion of treatment. *Erand Paka* i.e. Group B provided marked relief in 10% of the patients, moderate response in 30% of the patients and 60% of the patients were showed mild improvement after completion of the treatment. Combined effect of *Panchasama churna* and *Erand Paka* i.e. Group C provided marked relief in 10% of the patients, moderate response in 70% of the patients and 20% patients showed mild improvement after completion of the treatment. Combined effects of both drugs might be contributing together simultaneously to different extents in the overall recovery of the patient.

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Table 1*: Ingredients of *Panchasama Churna

No.	Name	Scientific name	Family	Parts used	Ratio
1	*Shunti*	Zingiber officinalis	Zingiberaceae	Rhizome	1 part
2	*Haritaki*	Terminalia chebula	Combretaceae	Fruit	1 part
3	*Krishna*	Piper longum	Piperaceae	Fruit	1 part
4	*Trivrit*	Operculina turpethum	Convolvulaceae	Root	1 part
5	*Saurvachal Lavana*	Potassium nitrate (unaqua sodium chloride)	Salt	Salt	1 part

Table 2: Ingredients of Erand Paka

No.	Name	Scientific/English name	Family	Parts used	Ratio
1	*Erand*	Ricinus communis	Euphorbiaceae	Seed	768g
2	*Ksheer*	Cow's milk	-	Milk	6.144 L
3	*Ghrita*	Cow's ghee	-	Ghee	384g
4	*Khand*	Saccharum officinarum	Graminae	Sugar candy	1.532g
12 gram of each of fine power of following ingredients					
5	*Shunti*	Zingiber officinalis	Zingiberaceae	Rhizome	1 part
6	*Marich*	Piper nigrum	Piperaceae	Fruit	1 part
7	*Pippali*	Piper longum	Piperaceae	Fruit	1 part
8	*Ela*	Elettaria Cardamomum	Scitamineae	Seed	1 part
9	*Twak*	Cinnamomum Zeylanicum	Lauraceae	Stem bark	1 part
10	*Patra*	Cinnamomum tamala	Lauraceae	Leaf	1 part
11	*Nagkeshar*	Mesua ferrea	Guttiferae	Stamens	1 part
12	*Chitrak*	Plumbago zeylanica	Plumbaginaceae	Root bark	1 part
13	*Pippalimool*	Piper longum	Piperaceae	Root	1 part
14	*Chavya*	Piper chaba	Piperaceae	Root	1 part
15	*Dhanyaka*	Coriandrum sativum	Umbelliferae	Fruit	1 part
16	*Mishreya*	Foeniculum vulgare	Umbelliferae	Fruit	1 part
17	*Shati*	Hedychium spicatum	Zingiberaceae	Rhizome	1 part
18	*Bilva*	Aegle marmelos	Rutaceae	Root	1 part
19	*Dipyaka*	Trachyspermum Roxburghianum	Umbelliferae	Fruit	1 part
20	*Jiraka*	Cuminum cyminum	Umbelliferae	Fruit	1 part
21	*Krishna Jiraka*	Nigella sativa	Apiaceae	Fruit	1 part
22	*Haridra*	Curcuma longa	Scitamineae	Rhizome	1 part
23	*Daruharidra*	Berberis aristate	Berberidaceae	Stem	1 part

24	*Ashwagandha*	Withania somnifera	Solanaceae	Root	1 part
25	*Bala*	Sida cordifolia	Malvaceae	Root	1 part
26	*Patha*	Cissampelos pareira	Menispermaceae	Root	1 part
27	*Hapusha*	Juniperus communis	Pinaceae	Root	1 part
28	*Vidanga*	Embelia ribes	Myrsinaceae	Fruit	1 part
29	*Pushkara*	Inula racemose	Asteraceae	Root	1 part
30	*Gokshur*	Tribulus terrestris	Zygophyllaceae	Fruit	1 part
31	*Kushta*	Saussurea lappa	Asteraceae	Root	1 part
32	*Haritaki*	Terminalia chebula	Combretaceae	Fruit	1 part
33	*Vibhitaki*	Terminalia bellirica	Combretaceae	Fruit	1 part
34	*Amalaki*	Emblica officinalis	Phyllanthaceae	Fruit	1 part
35	*Daru*	Cedrus deodara	Pinaceae	Heart wood	1 part
36	*Vellari*	Callicarpa Macrophylla	Verbenaceae	Stem	1 part
37	*Abha*	Acacia nilotica	Leguminosae	Stem bark	1 part
38	*Aluka*	Dioscorea bulbifera	Dioscoreaceae	Seed	1 part
39	*Shatavari*	Asparagus racemosus	Liliaceae	Root	1 part

Table 3: Effects of Treatment on Localized Symptoms of 10 patients of *Amavata* (Group A)

Localized Symptom	n	Mean		Mean Diff.	SD	SE	't'	P
		BT	AT					
Sandhishoola	10	2.60	1.40	1.20	0.42	0.13	3.84	<0.01
Sandhishotha	9	2.56	1.56	1.00	0	0	4.02	<0.001
Sandhiraga	9	2.11	1.00	1.11	0.33	0.11	5.55	<0.001
Sandhijadhyata	9	2.22	1.22	1.00	0	0	4.81	<0.001
Sancharivedana	8	2.88	1.75	1.13	0.35	0.12	5.46	<0.001
Ushna Sparshasahatva	9	2.22	1.11	1.11	0.60	0.20	3.24	<0.01
Sandhikaryahani	8	2.25	1.25	1.00	0	0	4.32	<0.001

Table 4: Effects of Treatment on Localized Symptoms of 10 Patients of* Amavata *(Group B)

Localized Symptom	n	Mean		Mean Diff.	SD	SE	't'	P
		BT	AT					
Sandhishoola	10	2.80	1.20	1.60	0.52	0.16	6.66	<0.001
Sandhishotha	10	2.50	1.10	1.40	0.52	0.16	5.72	<0.001
Sandhiraga	8	2.25	1.25	1.00	0.76	0.27	3.35	<0.01
Sandhijadhyata	10	2.20	1.00	1.20	0.42	0.13	6.00	<0.001
Sancharivedana	9	2.22	0.89	1.33	0.50	0.17	3.89	<0.01
Ushna Sparshasahatva	9	2.22	1.00	1.22	0.44	0.15	3.35	<0.01
Sandhikaryahani	8	2.00	0.88	1.12	0.35	0.12	3.21	<0.01

Table 5: Effects of Treatment on Localized symptoms of 10 Patients of* Amavata *(Group C)

Localized Symptom	n	Mean		Mean Diff.	SD	SE	't'	P
		BT	AT					
Sandhishoola	10	2.60	1.00	1.60	0.52	0.16	9.80	<0.001
Sandhishotha	10	2.40	0.90	1.50	0.53	0.17	7.83	<0.001
Sandhiraga	9	2.33	0.89	1.44	0.53	0.18	7.21	<0.001
Sandhijadhyata	10	2.20	0.70	1.50	0.53	0.17	7.40	<0.001
Sancharivedana	9	2.44	1.00	1.44	0.53	0.18	8.22	<0.001
Ushna Sparshasahatva	9	2.56	0.89	1.67	0.50	0.17	6.26	<0.001
Sandhikaryahani	8	2.25	0.88	1.38	0.52	0.18	4.92	<0.001

Table 6: Effects of Treatment on Investigation of Patients of *Amavata*

Parameters	Group	Mean		Mean Diff.	Relief %	SD	SE	't'	P
		BT	AT						
RA Factor	A	1.00	0.86	0.14	14.00	0.38	0.14	1.00	>0.05
	B	1.00	0.88	0.12	12.00	0.35	0.12	1.00	>0.05
	C	1.00	0.50	0.50	50.00	0.53	0.19	2.65	<0.05
Hb%	A	12.44	13.02	-0.58	4.66	0.31	0.10	0.88	>0.05
	B	12.45	12.93	-0.48	3.86	0.19	0.06	0.74	>0.05
	C	13.08	13.58	-0.50	3.82	0.31	0.10	0.78	>0.05
ESR	A	15.00	9.50	5.50	36.67	2.42	0.76	2.83	<0.05
	B	15.10	9.70	5.40	35.76	2.50	0.79	2.89	<0.01
	C	16.60	8.50	8.10	48.80	3.67	1.16	4.55	<0.001
TLC	A	6850	6690	160	2.34	128.67	40.69	0.49	>0.05
	B	6870	6750	120	1.75	48.30	15.28	0.38	>0.05
	C	7080	6980	100	1.41	40.82	12.91	0.28	>0.05
Neutrophil	A	57.60	63.20	-5.60	9.72	2.22	0.70	3.08	<0.01
	B	57.80	63.20	-5.40	9.34	2.17	0.69	3.00	<0.01
	C	57.40	61.10	-3.70	6.45	2.00	0.63	1.95	>0.05
Lymphocytes	A	35.00	29.80	5.20	14.86	2.25	0.71	3.19	<0.01
	B	35.10	29.80	5.30	15.10	2.31	0.73	3.22	<0.01
	C	35.60	31.80	3.80	10.67	2.49	0.79	2.19	<0.05
Eosinophil	A	4.80	5.20	-0.40	8.33	0.52	0.16	1.13	>0.05
	B	4.60	5.30	-0.70	15.22	0.95	0.30	1.74	>0.05
	C	4.30	5.30	-1.00	23.26	1.05	0.33	1.85	>0.05
Monocytes	A	2.60	1.80	0.80	30.77	0.63	0.20	2.68	<0.05
	B	2.50	1.70	0.80	32.00	0.63	0.20	2.59	<0.05
	C	2.70	1.70	1.00	37.04	0.67	0.21	3.31	<0.01

Table 7: Relief Percentage of Sandhigata Lakshan in 30 Patients of Amavata

Sandhigata Lakshan	Group A			Group B			Group C		
	Score		Relief %	Score		Relief %	Score		Relief %
	BT	AT		BT	AT		BT	AT	
Sandhishoola	26	14	46.15	28	12	57.14	26	10	61.54
Sandhishotha	23	14	39.13	25	11	56.00	24	09	62.50
Sandhiraga	19	09	52.63	18	10	44.44	21	08	61.90
Sandhijadhyata	20	11	45.00	22	10	54.54	22	07	68.18
Sancharivedana	23	14	39.13	20	08	60.00	22	09	59.10
Ushna sparshasahatva	20	10	50.00	20	09	55.00	23	08	65.20
Sandhikaryahani	18	10	44.44	16	07	56.25	18	07	61.10

Table 8: Relief Percentage of *Sarvadehik Lakshan* in 30 Patients of *Amavata*

Sarvadehik Lakshan	Group A			Group B			Group C		
	Score		Relief %	Score		Relief %	Score		Relief %
	BT	AT		BT	AT		BT	AT	
Jwara	10	05	50.00	08	05	37.50	08	04	50.00
Shirshoola	08	03	62.50	06	02	66.67	04	01	75.00
Nidranasha	10	08	20.00	12	07	41.67	12	05	58.33
Kandu	02	01	50.00	08	05	37.50	10	05	50.00
Daha	10	04	60.00	08	04	50.00	12	05	58.33
Stemitya	10	07	30.00	10	04	60.00	10	03	70.00
Bahumutrata	14	09	35.71	12	08	33.33	16	08	50.00
Bhrama	06	04	33.33	08	03	62.50	08	03	62.50
Hridgraha	02	01	50.00	04	02	50.00	08	03	62.50
Angagraha	20	13	35.00	18	10	44.44	18	08	55.55
Gaurav	16	10	37.50	14	08	42.85	18	07	61.11
Alasya	16	11	31.25	14	08	42.85	18	07	61.11
Mukhapraseka	06	04	33.33	06	04	33.33	08	03	62.50
Aruchi	14	09	35.71	16	10	37.50	14	06	57.14
Trishna	12	07	41.67	12	05	58.33	12	03	75.00
Kshudhanasha	10	06	40.00	10	04	60.00	14	06	57.14
Chardi	02	02	0	02	02	0	04	04	0
Antrakujan	04	03	25.00	04	03	25.00	06	04	33.33
Vibandha	14	10	28.57	12	04	66.67	16	05	68.75
Kukshishoola	08	05	37.50	08	04	50.00	12	05	58.33
Anaha	18	11	38.89	16	09	43.75	18	06	66.67
Shuntanga	06	04	33.33	04	02	50.00	06	02	66.67

Table 9: Effects of Treatment on Functional Assessment of Patients of *Amavata*

Functional Assessment	Group	Mean		Mean Diff.	Relief %	SD	SE	't'	P
		BT	AT						
Walking Time	A	38.70	25.20	13.50	34.88	6.40	2.02	6.45	<0.001
	B	42.70	24.60	18.10	42.39	3.35	1.06	11.12	<0.001
	C	40.00	20.20	19.80	49.5	3.55	1.12	10.16	<0.001
Grip Strength	A	9.40	11.00	- 1.60	17.00	1.07	0.34	2.14	<0.05
	B	11.90	16.60	- 4.70	39.50	2.36	0.75	5.89	<0.001
	C	12.10	18.50	- 6.40	52.89	3.72	1.18	5.97	<0.001
Foot Pressure	A	71.30	94.60	- 23.3	32.68	11.58	3.66	4.76	<0.001
	B	104.7	138.3	- 33.6	32.09	15.81	5.00	6.40	<0.001
	C	99.20	144.9	- 45.7	46.07	13.91	4.40	9.11	<0.001
General functional capacity	A	2.30	1.10	1.20	52.17	0.63	0.20	5.09	<0.001
	B	2.10	1.00	1.10	52.38	0.57	0.18	4.71	<0.001
	C	2.20	0.80	1.40	63.64	0.70	0.22	5.82	<0.001

Table 10: Comparative Assessment of Overall Effects of Treatment of patients of *Amavata*

Assessment	Group A		Group B		Group C	
	Number of patients	Percentage (%)	Number of patients	Percentage (%)	Number of patients	Percentage (%)
Complete Cure	Nil	-	Nil	-	Nil	-
Marked Relief	Nil	-	01	10	01	10
Moderate Response	Nil	-	03	30	07	70
Mild Improvement	10	100	06	60	02	20
No Response	Nil	-	Nil	-	Nil	-

GRAPH

Graph 1: Comparative Assessment of Overall Effects of Treatment