

International Journal of Research in AYUSH and Pharmaceutical Sciences

Research Article

THE EFFECTIVENESS OF *TAALISHADI CHURNA* COMPARED WITH *SITOPALADI CHURNA* IN THE MANAGEMENT OF *KASA*

Sirjana Shrestha¹, Shankar Gautam², Sabbu Thasineku¹, Jitendra Shrestha³, D.L. Bharkher⁴, Binod Kumar Singh^{5*}

¹Teaching Assistant, Ayurveda Campus, IOM, TU, Kathmandu, Nepal.

²P.G. Scholar, PG Dept. of Kayachikitsa, National Institute of Ayurveda, Jaipur.

³National Ayurveda Research and Training Centre, Kirtipur, Kathmandu, Nepal.

⁴Professor and Chairman, Nepal Ayurveda Medical Council, Kathmandu, Nepal.

^{5*}Ph.D Scholar, PG Dept. of Kayachikitsa, National Institute of Ayurveda, Jaipur, India.

ARTICLE INFO

Article history:

Received: Nov 13, 2020

Revised: Dec 10, 2020

Accepted: Jan 28, 2021

Keywords: *Kasa*, *Sitopaladi Churna*, *Taalishadi Churna*, Cough, Respiratory disorder.

ABSTRACT

Introduction: *Kasa* is a *Vata-kapha pradhana* disease, caused due to *Vata vimargagaman* and *Pranavaha shrotodusti*. Due to the various similarities in its clinical presentation, *Kasa* can be correlated with cough (bronchitis). According to National center for health statistics, 62 million cases of common cold and cough occurs each year.

Methodology: A total of 44 patients diagnosed as *Kasa* were randomly divided as per the lottery system of randomization. The patients of Group A were given 5 gram of *Sitopaladi Churna* twice a day for 30 days. The patients of Group B were given 5 gram of *Taalishadi Churna* twice a day for 30 days. The patients of both the groups were supposed to follow the dietary and behavioural advices. The response of the drug was assessed at pre-treatment and post-treatment time.

Results: There was equal significant change in all of the *Roga bala*, *Agni bala* and *Deha bala* parameters by both *Sitopaladi* and *Taalishadi Churna*. It was revealed that all other blood parameters except Hb, TLC and Neutrophil count used in the study were not significant in both the groups. Both drugs were found equally highly significant ($p < 0.0001$) in *Sushka kasa* and *Swarabheda*. *Sitopaladi churna* was more effective in relieving *Hritparswashool* ($p = 0.002$) whereas *Taalishadi churna* is more effective in reducing *Pitanisthivanam* ($p = 0.007$). In case of *Nirghosh*, *Sitopaladi churna* was more effective ($p < 0.0001$). On the other hand, *Taalishadi churna* was more effective in relieving *Peenasa* ($p < 0.001$).

Conclusion: Both *Sitopaladi Churna* and *Taalishadi Churna* were found to be equally effective in the treatment of *Kasa*.

INTRODUCTION

Kasa is a *Vata-kapha pradhana* disease, caused due to *Vata vimargagaman* and *Pranavaha shrotodusti*. *Kasa* is one of the most common disease which if neglected may cause complications like *Swarabheda*, *Vamana*, *Swasa*, *Kshaya*. The word *Kasa* implies 'to move' or 'to afflict'. Since '*Kasa*' involves the movement of *Vata* in the upper part of the body and because it also afflicts chest etc., it is called '*Kasaroga*'^[1]. *Kasa* has been described under

various categories in the classics of Ayurveda as an independent disease^[2,3], symptom^[4], complication^[5] and sequel. Due to the various similarities in clinical presentation, *Kasa* is correlated with cough (bronchitis)^[1,6]. Acharya Charaka has defined *Kasa* as '*Shusko va sa kapho va api kasanath kasaha*', that means the release of obstructed *Vayu* resulting in the production of abnormal sound in the process, which may be productive or dry is called *Kasa*.^[6]

A recent meta-analysis in 2015 A.D. indicated that the prevalence of chronic cough is 2-7% in Asia, 10-15% in Europe and 8-14% in the USA.^[7] According to National center for health statistics, 62 million cases of common cold and cough occurs each year. Cough is the fifth most common symptom for which patients seek effective medical care.^[8] Due to rapid industrialization and household, vehicles and industrial causes, pollution is increasing highly in the developing countries like Nepal and thus the prevalence of cough has increased. Every system of medicine must contribute to establish the effective treatment modality. In an order to put some effort in this we had made an attempt to compare the effectiveness of *Taalishadi churna* with *Sitopaladi churna* in the management of *Kasa*.

Methodology

Study Design

It was a quasi-experimental study and open label clinical trial. Patients with *Kasa* were the study population. Patients visiting the OPD of TU Ayurveda Teaching Hospital and diagnosed with *Kasa* was the sampling frame of the study. Patients of *Kasa* who were not under medication was the target population of this study.

Ethical Clearance

Ethical approval for this study was obtained from the IRB (Institutional Review Board), IOM, TU with Ref No. 377 (6-11-E)2/073/074. An informed written consent form was read to the patients and the form was handed to the subject to decide whether to participate or not and informed consent was obtained from all the subjects included in the study. Those not willing to give the informed consent were not included in the study.

Sample size

The total sample size was 44. It was divided into two groups each having 22 participants. Thus the sample size of each group was 22.

Sampling Method

The total 44 participants were divided into two groups randomly as per the lottery system of randomization. In case of drop outs, the number of sample size was maintained by enrolling the new cases.

Inclusion Criteria/ Eligibility

- Patients of either sex with age between 16 and 70 years.
- Patients of *Kasa* who are not under medication for last 3 months.

Exclusion Criteria

- Patients with diabetes and other serious illness.

- Patients with cough associated with chest injuries, haemoptysis and bronchial carcinoma.
- Pregnant and lactating women.

Investigations

Haemoglobin (Hb), Total leucocyte count (T.L.C.), Differential leucocyte count (D.L.C.), Erythrocyte Sedimentation Rate (E.S.R), Chest X-Ray and AFB Sputum Test (If necessary).

Interventions

Trial Drugs: Group A- *Sitopaladi churna*^[9] and Group B- *Taalishadi churna*^[10]

Dose: 5gm twice a day after meals

Dosage form: *Churna* (Powder)

Route of administration: Oral

Time of administration: Twice a day after meals

Anupana: *Madhu* (Honey)

Duration of study: 30 days

Follow up: 15 days

Note: Patients were guided thoroughly regarding *Pathya/ Apathya* regimen.

Outcomes

Change in the clinical symptoms of *Kasa*

Change in the blood Hb%, T.L.C, D.L.C., E.S.R.

The outcomes were measured after screening at baseline (BT) and at the end of 30 days (AT).

Methods of measurement

The data were collected with the help of case sheet specially designed for the study. The response of the drug was assessed pre-treatment and post-treatment in both the case of Group A and Group B.

The improvement in the patients was assessed mainly on the basis of relief in the cardinal symptoms of disease and blood tests for CBC and ESR. To assess the effect of therapy objectively, all the signs & symptoms were given scoring pattern depending upon their severity. *Rogabala* was used to assess the degree of disease activity of *Kasa* (Table 1), *Dehabala* was used to assess the physical condition of the patient (Table 2) and *Agnibala* was used to assess the state of digestion related symptoms (Table 3).

Total effect of the therapy was considered as:

Complete remission: 75-100% relief in sign in sign and symptoms of *Kasa*

Marked improvement: 50-74% relief in sign and symptoms of *Kasa*

Moderate improvement: 25-49% relief in sign and symptoms of *Kasa*

No improvement: Less than 25% relief in sign and symptoms of *Kasa*

Table 1: Rogabala Assessment Criteria

| S. No. | Lakshana | Stages | Scoring |
|--------|--|--|---------|
| 1. | <i>Sushka kasa</i> (Dry coughing) | No cough | 0 |
| | | Intermittent cough | 1 |
| | | Constant cough | 2 |
| | | Worsened cough | 3 |
| 2. | <i>Hritparswashool</i> (Chest pain) | No pain | 0 |
| | | Mild chest pain while coughing | 1 |
| | | Moderate chest pain while coughing | 2 |
| | | Pain is disturbing daily routine | 3 |
| 3. | <i>Swarbheda</i> (hoarseness of voice) | No hoarseness of voice | 0 |
| | | Mild hoarseness of voice | 1 |
| | | Moderate hoarseness of voice | 2 |
| | | Severe hoarseness of voice | 3 |
| 4. | <i>Pitanisthivam</i> (Yellowish sputum) | No sputum | 0 |
| | | Small quantity of yellowish sputum | 1 |
| | | Moderate quantity of yellowish sputum | 2 |
| | | Large quantity of yellowish sputum | 3 |
| 5. | <i>Nirghosh</i> (Resonant sounds) | No complaints | 0 |
| | | Mild resonant sounds | 1 |
| | | Moderate resonant sounds | 2 |
| | | Severe resonant sounds | 3 |
| 6. | <i>Bahala, Snigdha, sweta nishteevana</i> | No productive cough | 0 |
| | | Serous expectoration of traces of thick sputum | 1 |
| | | Moderately thick whitish sputum | 2 |
| | | Thick large quantity of whitish sputum | 3 |
| 7. | <i>Peenasa</i> (running nose) | No nasal discharge | 0 |
| | | Nasal discharge in less quantity | 1 |
| | | Yellowish discharge with heaviness in head and low grade fever | 2 |
| | | Yellowish nasal discharge with heaviness in head and fever | 3 |

Table 2: Dehabala Assessment Criteria

| S. No. | Lakshana | Stages | Scoring |
|--------|-------------------------|---|---------|
| 1. | <i>Swara Varna Yoga</i> | Looks cheerful | 0 |
| | | Looks gloomy | 1 |
| | | Looks tired and lethargic | 2 |
| | | Looks depressed | 3 |
| 2. | <i>Sharira Upachaya</i> | Weight increase by more than 2 kg | 0 |
| | | Weight increased by 2 kg | 1 |
| | | Weight increased by 1 kg | 2 |
| | | No increase in weight | 3 |
| 3. | <i>Balavridhhi</i> | Normal body strength and able to do work as usual | 0 |
| | | Reduced body strength but does not interfere with routine works | 1 |
| | | Reduced body strength and gets fatigued with little work | 2 |
| | | Generalised weakness affecting daily routine | 3 |

Table 3: Agnibala Assessment criteria

| S. No. | Lakshana | Stages | Scoring |
|--------|------------------------------|---|---------|
| 1. | <i>Jirna Ahara Lakshana</i> | Presence of all five symptoms after 6 hrs | 0 |
| | | Presence of four symptoms after 6 hrs | 1 |
| | | Presence of three symptoms after 6 hrs | 2 |
| | | Presence of two symptoms after 6 hrs | 3 |
| 2. | <i>Ruchirahara Kale</i> | Equal willing towards all <i>Bhojya Padartha</i> | 0 |
| | | Willing towards some specific <i>Ahara</i> or <i>Rasavishesha</i> | 1 |
| | | Willing towards only most liking food and not to other | 2 |
| | | Unwilling for food, but takes meal | 3 |
| 3. | <i>Abhyavarana-Abhilasha</i> | Taking food in normal quantity twice a day | 0 |
| | | Taking food in moderate quantity twice a day | 1 |
| | | Taking food in less quantity twice a day | 2 |
| | | Taking food in less quantity once a day | 3 |

Statistical Design

For assessing the response of the study, the data from all the parameters were analyzed using Microsoft Office Excel 2007 and IBM SPSS Statistics 21 as per the study design. The mean, standard deviation, standard error, 't' value, 'p' value were calculated. Paired t test and independent t test were used as the statistical tool for the purpose of the analysis. The total result including the overall effect of therapy was presented in tables and as bar diagram for both groups. The results were compared within and between the groups. All the tables of chapter 4 were generated by using the SPSS and the entire bar diagrams were generated by using the Microsoft Office Excel 2007.

Observation and Results

Age wise distribution showed that 36.36% of patients were *Yuva*, 36.36% were *Madhyama* and 27.27% were *Vridhdha*. Gender wise distribution showed that 31.82% of patients were male and 68.18% were female. Religion wise distribution showed that most of the participants i.e, 88.64% of patients were Hindu, 9.09% were buddhist and only 2.27% were Muslim because the study area was Hindu dominant population. Ethnicity wise distribution showed that 40.91% of patients were Brahmin, 31.82% were Newar, 18.18% were Kshetri, 4.55% were Tharu, only 2.27% were Limbu and 2.27% were Muslim. Occupation wise distribution showed that 36.36% of participants were housewives, 22.73% of participants were in job and 6.82% were in business, 27.27% were student and 6.82% were retired. According to the family history of Bronchial Asthma/ PTB, it showed that 27.273% of the participants were with family history of Br. Asthma, only 2.273% with PTB and 70.454% without Bronchial Asthma or PTB. Dietary habit shows 81.82% were non-vegetarians and only

18.18% were vegetarians. Smoking Habit wise distribution of the participants showed that 13.64% of the participants were ex-smoker, only 9.09% were smoker and 77.27% were non-smoker. Preferred *Rasa* in *Ahara* wise distribution of the participants showed that 20.45% of the participants preferred *Madhura rasa*, 4.55% preferred *Amla rasa*, 13.64% preferred *Lavana rasa* and 2.27% preferred *Katu rasa* and most of the participants i.e. 59.09% preferred mixed *rasa*. *Prakriti* wise distribution of the participants showed that 63.64% of the participants were of *Vata-pitta prakriti*, 15.91% were of *Pitta-kapha prakriti* and 20.45% were of *Kapha-vata prakriti*. Status of agni wise distribution of the participants showed that 27.27% of the participants had *Sama agni*, 11.36% had *Vishama agni*, 56.82% had *Manda agni* and only 4.55% had *Tikshna agni*.

The mean score of subjective parameters, relief and significance of Group A and Group B has been shown in Table 4 and that of Objective parameters has been shown in Table 5. After analysing statistically in *Sushka kasa* and *Swarabheda*, both drugs were found equally highly significant ($p < 0.0001$). *Sitopaladi churna* was more effective in relieving *Hritparwashool* ($p=0.002$) than *Taalishadi churna* ($p=0.005$). Whereas *Taalishadi churna* is more effective in reducing *Pitanisthivanam* ($p=0.007$) than *Sitopaladi churna* ($p= 0.015$). In case of *Nirghosh*, *Sitopaladi churna* was more effective ($p<0.0001$) than *Taalishadi churna* ($p=0.002$). On the other hand, *Taalishadi churna* was more effective in relieving *Peenasa* ($p<0.001$) than *Sitopaladi churna* ($p=0.0001$).

Relief percentage showed that *Sitopaladi churna* brought 73.91% relief in *Sushka kasa* while *Taalishadi churna* brought 91.27% relief. In case of

Hritparshwashool, *Sitopaladi churna* brought 75% relief while *Taalishadi churna* brought 87.5% relief. *Swarbheda* was decreased by 87.04% by Group A drug and 76.67% by B group drug. *Pitanisthivanam* was almost equally relieved, 94.4% and 95.24% by Group A and Group B medicine. *Sitopaladi churna* relieved *Nirghosh* by 93.6% and *Taalishadi churna* relieved by 91.67%. 78.3% and 74.24% relieved by

Group A and B drug respectively in *Swetanisthivanam*. *Taalishadi churna* gave good result in case of *Peenasa* i.e., 97.62% relief compared to 87.87% by *Sitopaladi churna*. (Fig 1, Table 4, 5).

In analyzing the total efficacy of therapy, it is found that Group A has 54.54% and Group B has 77.27% complete remission in relieving subjective parameters of *Roga bala* (Fig 2).

Table 4: Effect of Interventions on Subjective Parameters

| Parameters | Drugs given | Mean score of | | Mean score Difference | % Relief | Paired t test | | | |
|----------------------------|-------------|---------------|--------|-----------------------|----------|---------------|----------|-----------|--------------------------|
| | | BT | AT | | | S.D. (+) | S.E. (+) | 't' Value | Significance (2- tailed) |
| <i>Sushka kasa</i> | Gr. A | 1.739 | 0.39 | 1.409 | 73.91 | 0.79 | 0.169 | 8.299 | 0.000 |
| | Gr. B | 1.682 | 0.227 | 1.4545 | 91.27 | 0.74 | 0.157 | 9.238 | 0.000 |
| <i>Hritparswashool</i> | Gr. A | 0.652 | 0.174 | 0.50 | 75 | 0.6726 | 0.1434 | 3.487 | 0.002 |
| | Gr. B | 0.591 | 0.091 | 0.50 | 87.5 | 0.74 | 0.1578 | 3.169 | 0.005 |
| <i>Swarbheda</i> | Gr. A | 1.174 | 0.174 | 1.0455 | 87.037 | 0.7222 | 0.154 | 6.789 | 0.000 |
| | Gr. B | 1.125 | 0.375 | 0.9091 | 76.667 | 0.8122 | 0.1729 | 5.257 | 0.000 |
| <i>Pitanisthivanam</i> | Gr. A | 0.478 | 0.0435 | 0.45 | 94.44 | 0.8004 | 0.1707 | 2.664 | 0.015 |
| | Gr. B | 0.591 | 0.0455 | 0.5455 | 95.238 | 0.8579 | 0.1829 | 2.982 | 0.007 |
| <i>Nirghosh</i> | Gr. A | 0.783 | 0.087 | 0.7273 | 93.589 | 0.7025 | 0.1498 | 4.856 | 0.000 |
| | Gr. B | 0.773 | 0.091 | 0.6818 | 91.667 | 0.8937 | 0.1905 | 3.578 | 0.002 |
| <i>Swetanisthivan</i> | Gr. A | 0.826 | 0.217 | 0.6364 | 78.33 | 0.7895 | 0.1683 | 3.780 | 0.001 |
| | Gr. B | 1.091 | 0.318 | 0.7727 | 74.242 | 0.9223 | 0.1966 | 3.930 | 0.001 |
| <i>Peenasa</i> | Gr. A | 0.913 | 0.13 | 0.8182 | 87.88 | 0.958 | 0.2042 | 4.006 | 0.001 |
| | Gr. B | 1 | 0.045 | 0.9545 | 97.62 | 0.8985 | 0.1916 | 4.983 | 0.000 |
| <i>Jirnaahara lakshana</i> | Gr. A | 1.609 | 0.435 | 1.2273 | 75.83 | 0.6853 | 0.1461 | 8.399 | 0.000 |
| | Gr. B | 1.591 | 0.182 | 1.4091 | 91.27 | 0.7964 | 0.1698 | 8.299 | 0.000 |
| <i>Ruchiraharakale</i> | Gr. A | 1.652 | 0.435 | 1.2727 | 77.78 | 0.6311 | 0.1345 | 9.459 | 0.000 |
| | Gr. B | 1.773 | 0.273 | 1.5 | 87.5 | 0.8018 | 0.1709 | 8.775 | 0.000 |
| <i>Abhyavaran abhilasa</i> | Gr. A | 1.522 | 0.304 | 1.2727 | 83.33 | 0.7025 | 0.1498 | 8.498 | 0.000 |
| | Gr. B | 1.545 | 0.091 | 1.4545 | 95 | 0.7385 | 0.1575 | 9.238 | 0.000 |
| <i>Swarvarnayoga</i> | Gr. A | 1.565 | 0.304 | 0.3182 | 83.33 | 0.7162 | 0.1527 | 8.632 | 0.000 |
| | Gr. B | 1.773 | 0.182 | 1.5909 | 92.85 | 0.8541 | 0.1821 | 8.737 | 0.000 |
| <i>Sharirarupachaya</i> | Gr. A | 2.869 | 2.174 | 0.7273 | 23.19 | 0.6311 | 0.1345 | 5.405 | 0.000 |
| | Gr. B | 3 | 1.955 | 1.0455 | 33.33 | 0.4857 | 0.1036 | 10.095 | 0.000 |
| <i>Balavridhi</i> | Gr. A | 1.478 | 0.304 | 1.2273 | 70.83 | 0.7516 | 1.602 | 7.659 | 0.000 |
| | Gr. B | 1.636 | 0.273 | 1.3636 | 85.71 | 0.6580 | 0.1403 | 9.721 | 0.000 |

Table 5: Effect of Interventions on Objective Parameters

| Parameters | Group | Mean score | | Mean score Difference | % Relief | Paired t test | | | |
|------------|-------|------------|----------|-----------------------|----------|---------------|---------|-----------|-----------------|
| | | BT | AT | | | S.D. | S.E.M. | 't' Value | Sig. (2-tailed) |
| Hb % | Gr. A | 13.59 | 13.88 | 0.291 | 2.142 | 1.1646 | 0.2428 | 1.198 | 0.244 |
| | Gr. B | 13.53 | 14.69 | 1.168 | 8.634 | 0.7962 | 0.1660 | 7.036 | 0.000 |
| TLC | Gr. A | 9427.273 | 8223.182 | 1204.091 | 12.772 | 1369.998 | 285.664 | 4.215 | 0.000 |
| | Gr. B | 8654.545 | 7875.909 | 778.636 | 8.996 | 1897.363 | 395.627 | 1.968 | 0.062 |
| Neutrophil | Gr. A | 62.682 | 57.909 | 4.7727 | 7.614 | 7.67033 | 1.5966 | 2.989 | 0.007 |

| | | | | | | | | | |
|-------------------------|--------------|--------|--------|----------|--------|---------|---------|--------|-------|
| Count | Gr. B | 61.182 | 57.455 | 3.7273 | 6.09 | 6.15837 | 1.2841 | 2.903 | 0.008 |
| Lymphocyte count | Gr. A | 34.955 | 35.5 | 0.54545 | 1.56 | 5.58998 | 1.16559 | 0.0468 | 0.644 |
| | Gr. B | 35.727 | 35.091 | 0.63636 | 1.78 | 6.0943 | 1.27074 | 0.501 | 0.622 |
| Eosinophil count | Gr. A | 2.864 | 2.727 | 0.136363 | 4.78 | 2.07354 | 0.43236 | 0.315 | 0.755 |
| | Gr. B | 2.409 | 2.136 | 0.27273 | 11.332 | 1.60062 | 0.33375 | 0.817 | 0.423 |
| Monocyte count | Gr. A | 1.136 | 1.045 | 0.090909 | 8.01 | 1.64894 | 0.34382 | 0.264 | 0.794 |
| | Gr. B | 1.136 | 1.5 | 0.3636 | 32.042 | 2.2872 | 0.4769 | 0.762 | 0.454 |
| Basophil Count | Gr. A | 0.136 | 0.045 | 0.90909 | 66.91 | 0.28747 | 0.0599 | 1.517 | 0.144 |
| | Gr. B | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ESR | Gr. A | 17.5 | 15.682 | 1.81818 | 10.388 | 6.1395 | 1.28018 | 1.420 | 0.170 |
| | Gr. B | 10.388 | 10.479 | 1.5909 | 1.847 | 4.13036 | 0.86124 | 1.847 | 0.078 |

Fig 1. Percentage of Relief in Parameters

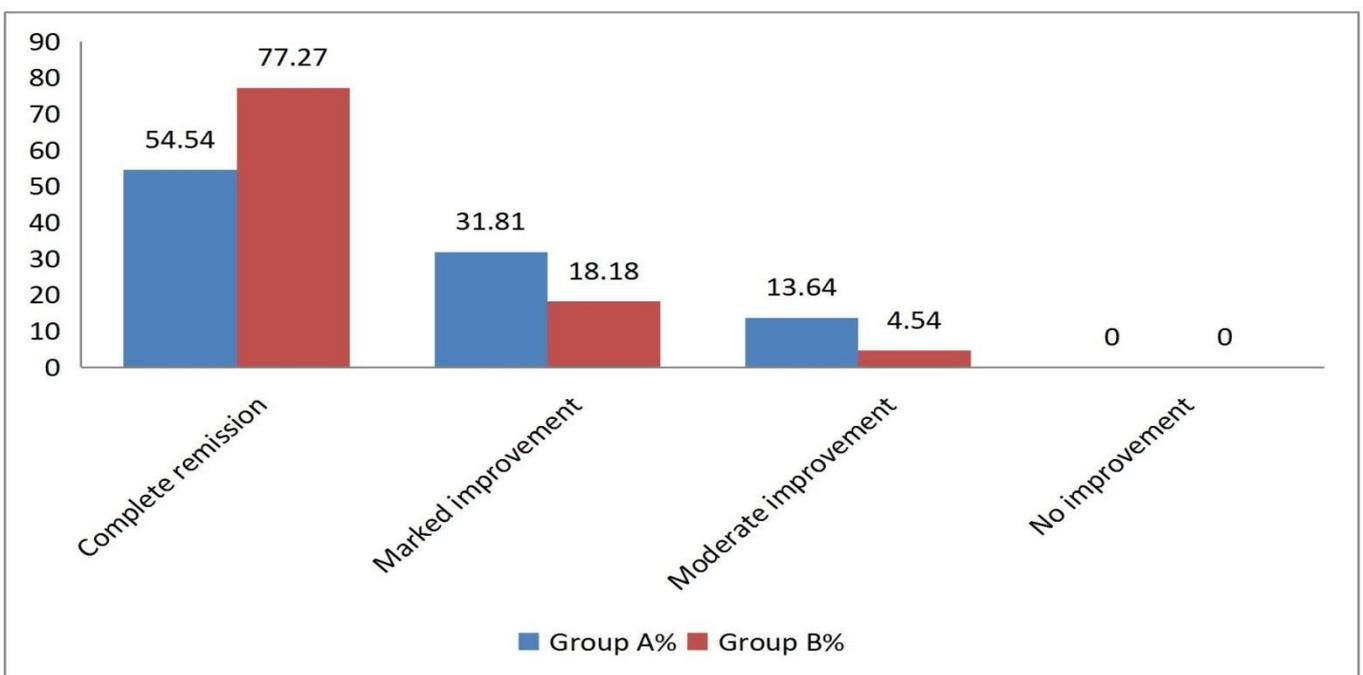
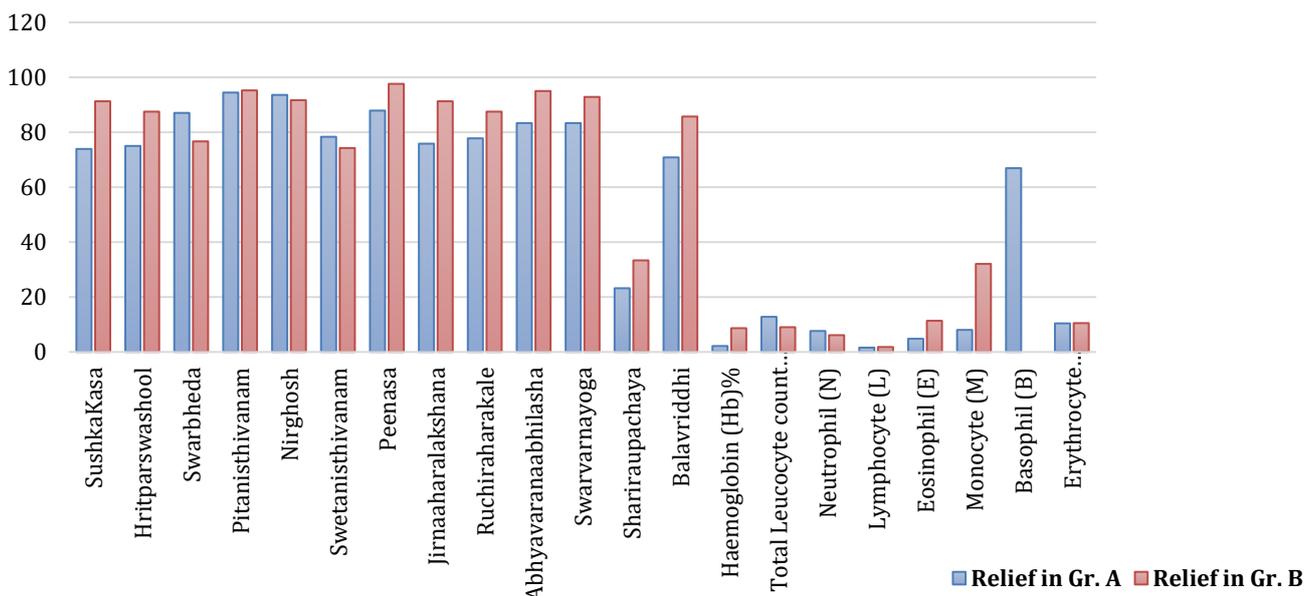


Fig 2: Overall improvement on the Subjective parameters of Roga bala

DISCUSSION

Cough is an important respiratory symptom because it cannot only sometimes suggest serious underlying medical conditions but also cause serious complications and significantly affect a patient's lifestyle and sense of wellbeing.^[11] There are a number of preparations described in Ayurveda for the management of *Kasa*. *Sitopaladi Churna* and *Taalishadi Churna* are two of the preparations described in various Ayurvedic literatures mentioning their actions like *Tikshna*, *Ushna*, *Vata-Kaphahara*, *Deepana*, *Roochana*, *Swashara*, *Kasahara*. Therefore they can help to reduce the growing human burden associated with cough. These preparations have an advantage of being used in the community for centuries since *Samhita kala*.

Sitopaladi churna is very effective in curing disorders like *Swasa*, *Kasa*, *Kshaya*, *Hastapa padanga daha*, *Mandagni*, *Shuaptajihwatwo*, *Parshwashoola*, *Aruchi*, *Jwara*, *Urdhwogat Rakta-pitta*. *Charak* has mentioned *Pippali* in *Kasahara* and *Kanthya gana*. *Pippali* has *Snigdha*, *Vrishya*, *Katu rasa*, *Madhura vipaka*, *Sara guna*, *Vata-kaphahra*, *Swas-kasahara* properties. *Twak*, and *Ela* have *Tikshna*, *Ushna*, *Rukshya*, *Pittaprakopak*, *Rochana*, *Deepana* properties. *Sitopaladi Churna* is a polyherbal Ayurvedic formulation used as an antitussive, analgesic and antipyretic.^[12]

Taalishadi churna is very effective in curing disorders like *Kasa*, *Swasa*, *Jwara*, *Chhardi*, *Aruchi*, *Atisara*, *Shosha*, *Sotha*, *Adhmana*, *Hridroga*, *Plihavridhi*, *Grahani*, and *Pandu roga*. It is also *rochana*, *pachana*, *deepana*, *mudha vatanulomaka*. *Taalispotra* has antitussive properties.^[13,14] *Zingiber officinale* has antitussive properties.^[15] *Sunthi* has *Deepana*, *Brishya*, *Grahi*, *Hridya*, *Bibandhanut*, *Ruchya*, *Laghu*, *Swadupaka*, *Snigdha*, *Usna*, *Kaphavatajita* properties. *Maricha* has *Katu ras* and *Katu vipaka*, *Laghu* and *Kaphagham* properties. *Pippali* has *Snigdha*, *Vrishya*, *Katu rasa*, *Madhura vipaka*, *Sara guna*, *Vata-kaphahra*, *Swas-kasahara* properties. *Twak*, and *Ela* have *Tikshna*, *Ushna*, *Rukshya*, *Pittaprakopak*, *Rochanam*, *Deepanam* properties. Therefore, due to different properties of ingredients in *Taalishadi churna*, it is effective in both types of cough- productive and non-productive. Due to high content of *Misri* (crystallized sugar lumps), it becomes more useful in non-productive cough. However, the other ingredients in *Taalishadi churna* have antitussive, mucolytic and expectorant action, which make it effective.

The clinical data of this study regarding the *Roga bala* parameters supports the view that both

these drugs are equally moderately highly potent in relieving *Kasa* signs and symptoms in patients. There was further evidence that *Taalishadi churna* is as effective as *Sitopaladi* in ameliorating all the clinical symptoms of *Kasa* like *Sushka kasa*, *Hritparswashool*, *Swarbheda*, *Pitanisthivanam*, *Nirghosh*, *Swetanisthivanam* and *Peenasa*.

There was equally very highly significant change in all of the *Agni bala* ($p < 0.0001$) and *Deha bala* parameters ($p < 0.0001$) when treated with both *Sitopaladi* and *Taalishadi Churna* and further gave evidence that *Taalishadi churna* is as effective as *Sitopaladi* in improving the *Agni bala* like *Jirnaaharalakshana*, *Ruchiraharakale* and *Abhyavaraanaabhilasha* and *Deha bala* like: *Swarvarnayoga*, *Shariraupachaya* and *Balavridhi*.

The quantitative analysis of Hb% revealed that *Taalishadi Churna* is more significant than *Sitopaladi Churna* in increasing Hb% level. The change in Total leucocyte count was significant in *Sitopaladi churna* group whereas it was not significant in *Taalishadi churna* group. In case of Neutrophil count, it was significant in both the groups. Further the study revealed that all other blood parameters used in the study were not significant in both the groups.

Although it was well tried to use a centralized laboratory before and after treatment, there were few cases who had used other laboratories for haematological tests. This may lead to variations in the test reports. So, using a centralized laboratory might have improved the quality of the study.

There was no provision of blindness in this clinical research. The provision might have allowed some sort of biasness in the result of the trial. The sample size of this study may not be adequate to determine the effectiveness of the drugs. The time duration of treatment was for 30 days, which may be insufficient for some chronic cases of *kasa*. Increasing the time frame of treatment might have brought much good results in subjective and objective parameters.

This study, though collected data pertaining to all the clinical features, evaluate the effectiveness of the interventions based on the analysis of certain clinical features leaving the other data. A study design with different parametric assessment would be advocated so that the evaluation can be made in the basis of analysis of all the clinical features.

CONCLUSION

Sitopaladi Churna and *Taalishadi Churna* both were found to be effective in the treatment of *Kasa*. The effectiveness varies on the presenting clinical features, thus the proper assessment of signs and symptoms and the judicious use of these drugs is essential for highly effective treatment of *Kasa*.

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Cite this article as:

Sirjana Shrestha, Shankar Gautam, Sabbu Thasineku, Jitendra Shrestha, D.L. Bharkher, Binod Kumar Singh. The Effectiveness of Taalishadi Churna Compared with Sitopaladi Churna in the Management of Kasa. *International Journal of Research in AYUSH and Pharmaceutical Sciences*, 2020;4(12):470-477.

Source of support: Nil, Conflict of interest: None Declared

*Address for correspondence

Dr. Binod Kumar Singh

Ph.D Scholar,
PG Dept. of Kayachikitsa,
National Institute of Ayurveda,
Jaipur, India.

Email:

drbinodbaghel@yahoo.com

Mobile: +91 8448207879

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