WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 2, 951-964. Research Article ISSN 2277– 7105

# A CLINICAL STUDY TO EVALUATE THE EFFICACY OF SHIGRU PALLAVA-MADHU ASHCYOTANA IN KAPHAJA ABHISHYANDA W. S. R TO VERNAL KERATO CONJUNCTIVITIS

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Article Received on
09 Dec. 2020,

Revised on 29 Dec. 2020,
Accepted on 19 Jan. 2021

DOI: https://doi.org/10.17605/OSF.IO/TSV2H

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## ABSTRACT

*Kaphaja Abhishyanda* is one among the *sarvagata netra rogas* mentioned by Acharya Sushruta. In modern science, it can be correlated to vernal kerato conjunctivitis (VKC). VKC is one the type of allergic conjunctivitis which is prevalent in tropics and affects young males. It deceases learning hours of school going children and develop sight threatening longstanding permanent inflammatory sequels. Drug selected for present study *Shigru Pallava-Madhu Ashcyotana* is heaving *lekhana*, *shirovirechaka*, *swedopaga*, *krimighana* and *chakshushya* properties which helps in breakdown of the pathogenesis of *Kaphaja Abhishyanda* (VKC). In the present study 30 patients of *Kaphaja Abhishyanda* (VKC) were selected and randomly divided into two groups of 15 patients each. Group I (Trial Group) was treated with *Shigru Pallava-Madhu Ashcyotana*. Group II (control group) was treated with Sodium cromoglycate 2% eye drop. Their individual and comparative effect were revealed in the study. A significant relief was found in the most of symptoms and signs of *Kaphaja Abhishyanda* (VKC) after completion of trial in the patients treated with trial drug.

**KEYWORDS:** *Kaphaja Abhishyanda*, Vernal Kerato Conjunctivitis, *Shigru Pallava-Madhu Ashcyotana.*

## INTRODUCTION

Seventy six eye diseases are described in *Susruta Samhita. Abhishyanda* is described under the *sarvagata netra rogas. Abhishayanda* is the root cause of all eye diseases.[1] which has main feature of discharge or secretion. Four types of *abhishyanda* have been detailed in *Ayurvedic* texts. *Kaphaja Abhishyanda* is one among them, which is characterized by *kandu, picchil srava, muhurmuhur srava, guruta, shopha*[2] etc. Similar disease by virtue of its symptoms has been described in contemporary medical science i.e. Vernal Kerato Conjunctivitis (VKC). VKC is sight threatening sub type of allergic conjunctivitis and it is a prevalent disease of tropical areas. It is a recurrent bilateral chronic allergic inflammatory condition of the ocular surface affecting mainly young males in first decade of life. Diagnosis is based on clinical features including itching, sticky mucous discharge, photophobia and giant papillae on upper tarsal conjunctiva. In spite of its mostly benign and self-limited presentation, therapeutic measures are required to control clinical features of VKC and to avoid the longstanding permanent inflammatory sequels that may lead to fibro vascular reaction, new collagen deposition, tissue remodeling and permanent visual damages. Several studies indicate that topical anti-inflammatory and anti-allergic eye drops are the main stay of the treatment for VKC, but a gold standard treatment has not yet been established for the disease.[3,4] Several reports indicate that some patients do not respond to anti-allergic treatment and respond only to topical steroids. Treatment modalities such as Mast cell stabilizers, corticosteroids and NSAIDs are costly and not devoid of side effects. The disease causes loss of many learning hours to predominantly school going children due to extremely troublesome itching, discomfort and photophobia. In fact, moderate to severe cases may not respond to common anti-allergic treatments and may also require new therapeutic strategies.

In *Sushruta Samhita* separate chapter has been devoted to the treatment of *Kaphaja Abhishyanda* after explaining *sarvagata roga.* It should be treated as soon as possible otherwise complications due to *abhishyanda* will be severe in nature and difficult to save eye sight[7] In *kaphaja* type of disease *acharyas* have advocated *lekhana* type of treatment modalities and described many *ayurvedic* formulations for the treatment of *Kaphaja Abhishyanda.* Out of those *yogas,* one formulation viz. *Shigru Pallava-Madhu Ashcyotana* was selected for the treatment of the disease. This selected drug formulation is *lekhana* type *ashcyotana* and having *laghu ruksha* and *tikshana* properties, so it is beneficial in the *samprapti vighataana* of the disease and suitable for recurrence of disease by *tikshana,*

*shirovirechaka*, *swedopada* and *krimighana* properties. It is also having *chakshushya* property that strengthen vision (*dristi bala*).

Considering all these points *Shigru Pallava-Madhu Ashcyotana* was proposed to be taken up for evaluation of its effect in *Kaphaja Abhishyanda* (VKC) to come up with safe and cost effective treatment for this ailment.

## AIM AND OBJECTIVES

1. To assess the efficacy of *Shigru Pallava-Madhu Ashcyotana* in patients suffering from *Kaphaja Abhishyanda* (VKC) and to compare its efficacy with sodium cromoglycate 2% eye drops.
2. To evaluate the adverse effects of the drug, if any.

## MATERIALS AND METHODS

1 **Study design:** The present study is an interventional, randomized, open label and control group trial.

2 **Selection of patients:** The clinical study was conducted on patients attending the O.P.D. and I.P.D. of *Shalakya* ophthalmic unit of National Institute of *Ayurveda*, Jaipur. Freely given informed written consent was obtained from every subject prior to research participation. A research proforma was prepared to study all the condition of patients.

**Ethical clearance:** Institutional ethics committee approval was taken prior to initiation of research work vide letter number IEC/ACA/2015/89 dated 21/05/2015.

### Inclusion criteria

1. Patients presenting with signs and symptoms of *Kaphaja Abhishyanda* and Vernal Kerato Conjunctivitis described as per *Ayurvedic* and modern parlance.
2. Patients between the age group of 5 to 25 years.

### Exclusion criteria

1. Patients not willing for the trial.
2. Cases complicated with corneal pannus, corneal neovascularization, corneal ulcer, keratoconus and corneal plaques.
3. Patients suffering from infective ophthalmic diseases.
4. Patients suffering from Atopic Kerato Conjunctivitis, Giant Papillary Conjunctivitis and Seasonal Allergic Conjunctivitis.

### 3 Grouping of patients

In the study 38 clinically diagnosed patients of *Kaphaja Abishyanda* (VKC) were selected and randomly divided into two groups. Out of these 38 patients, 30 patients completed the trial.

- **Group I (Trial group):** 19 Patients were treated with *Shigru Pallava-Madhu Ashcyotana.*
- **Group II (Control group):** 19 Patients were treated with Sodium cromoglycate 2% eye drops.

### 4 Administration of drug

**Group I (Trial Group):** *Shigru Pallava-Madhu Ashcyotana* was administered in form of *Ashcyotana* 2 drops QDS for 15 days.

**Group II (Control Group):** Sodium cromoglycate 2% eye drops Instilled in conjunctival cul de sac2 drops QDS for 15 days.

CBC, ESR, TEC etc. investigations were done before and after trial. Follow up was once in 15 days for a period of 30 days after completion of trial.

### 5 Assessment criteria

Assessment was done on the basis of clinical improvement in signs and symptoms using a standardized grading scale during the study and scoring before and after treatment.

**A. Symptoms**

- *Kandu* (Itching)
- *Picchila srava* (Ropy discharge)
- *Ashru* (Lacrimation)
- *Akshi shopha* (lid oedema)
- *Guruta* (Heaviness)
- Photophobia
- Burning Sensation
- F.B. sensation

**B. Signs**

- Gelatinous opacification
- Papillae at lower conjunctiva
- Blepharitis

- Papillary proliferation with velvety appearance
- Horner trantas dots
- Papillae at upper palpebral Conjunctiva
- Follicles at lower palpebral Conjunctiva
- Palpebral hyperaemia
- Bulbar hyperaemia
- Lacrimal effusion

### 6 Statistical analysis

Various observations made and results obtained were computed statistically using Wilcoxon matched-pairs signed-ranks test, Mann-Whitney test, student paired‘t’ test and student unpaired ‘t’ test on graphpad-Instat3 software. Individual I and II group - Wilcoxon matched pairs signed ranks test for nonparametric data and paired‘t’ test for parametric data. Intergroup comparison between I and II group - Mann Whitney test for nonparametric data and student unpaired‘t’ test for parametric data. The results obtained were considered significant for p value ≤0.05 and non-significant for p value >0.05.

## OBSERVATIONS AND RESULTS

### Observations

- In the present study maximum numbers of patients were between5-10years age group (57.89 %), 76.32 % patients were male and 68.42 % were Hindu.
- Maximum numbers of patients were student (94.74 %), unmarried (94.74%), and with lower middle class economic status (76.32 %).
- The study shows that maximum patients were primary educated (78.95 %), residents of urban area (78.95 %) and (34.21 %) were suffering since 1 month from VKC.
- All the 100 % patients had negative family history.
- Maximum patients were vegetarian (52.63 %) and were having regular bowel habit (73.68 %).
- Maximum number of patients (71.05 %) were having seasonal variation and 28.95 % patients were having no variation with season in the disease.
- Only 5.26 % patients were having history of naso bronchial allergies.
- All (100 %) patients were complained of itching, whereas 89.47% patients were having lacrimation, 60.53 % F.B. sensation, 57.29 % burning sensation,55.29 % photophobia,

34.21 % ropy discharge and 13.16 % patients were having lid swelling and Heaviness in lids.

- Maximum numbers of patients 100 % patients were having papillae at upper palpebral conjunctiva, palpebral hyperaemia, and bulbar hyperaemia, 97.37 % patients were having papillae at lower conjunctiva, 94.74 % patients were having papillary proliferation with velvety appearance, 81.58 % patients were having lacrimal effusion, 75% patients were having gelatinous opacification, 46.05 % patients were having follicles at lower palpebral conjunctiva, 42.11 % patients were having Horner trantas dots and 38.16 % patients were having blepharitis.

## RESULTS

### In group I (Showed in table no. 1 & 2)

- Statistically significant ($p \leq 0.00l$) relief was found in symptom foreign body sensation 95.84%, *picchil srava* 92.86%, *kandu* 77.36%, *ashru* 73.79%, and burning sensation 87.51%, palpebral hyperaemia 88.45%, lacrimal effusion 83.36%, bulbar hyperaemia 82.64 %, gelatinous opacification 79.99%, papillary proliferation with velvety appearance 58.98 %, and papillae at lower conjunctiva 38.09%,
- Statistically significant relief ($p \leq 0.001$) were found in blepharitis 77.38 %, and Horner trantas dots 65.39 %.
- Statistically significant ($p \leq 0.01$) result was found in *akshi shopha* 71.42% and Papillae at upper palpebral Conjunctiva 28.57 %.
- Statistically insignificant ($p > 0.05$) result was found in *guruta* 49.99% and Follicles at lower palpebral Conjunctiva 26.66 %.

### In group II (Showed in table no. 3 & 4)

- Statistically significant relief ($p \leq 0.0001$) were found in foreign body sensation 79.99 %, *kandu* 62.50 % and *ashru* 50.02 %, lacrimal effusion 92.86 % and bulbar hyperaemia 62.81 %.
- Statistically significant relief ($p \leq 0.001$) were found in palpebral hyperaemia 29.26 %.
- Statistically significant relief ($p \leq 0.01$) were found in *picchil srava* 57.15 % and burning sensation 55.55 % and gelatinous opacification 35.50 %.
- Statistically significant relief ($p \leq 0.05$) was found in photophobia, papillary proliferation with velvety appearance 21.87 % and Papillae at upper palpebral Cojunctiva 19.36 %.

- Statistically not significant relief ($p>0.05$) were found in *akshi shopha* 33.33 %, *guruta* 50.02%, horner trantas dots 45.46 %, blepharitis 49.98 %, follicles at lower palpebral Conjunctiva 11.11% and papillae at lower conjunctiva 6.25 %.

**Inter group comparison (showed in table no. 5 & 6)**

- On inter group comparison, significant difference ($p\leq0.0001$) was observed in Palpebral hyperaemia and papillae at lower conjunctiva with Group I providing 59.19 % more relief than Group II in palpebral hyperaemia and 31.84 % more relief in papillae at lower conjunctiva than Group II.
- Significant result ($p<0.001$) was observed in *kandu* and *picchil srava* and papillary proliferation with velvety appearance, with Group I providing 14.86 % more relief than Group II more relief in *kandu*, 35.71 % more relief in *picchil srava* and 37.11 % more relief in papillary proliferation with velvety appearance than Group II.
- Significant difference ($p\leq0.01$) was observed in gelatinous opacification with Group I providing 27.26 % more relief than Group II.
- Significant results ($p<0.05$) were found in *ashru*, bulbar hyperaemia, horner trantas dots, and blepharitis with Group I providing 23.77 % more relief than Group II in *ashru*, 27.4 % more relief in blepharitis, 19.93 % more relief in horner trantas dots and 19.83 % more relief in bulbar hyperaemia than Group II.
- Not significant results ($p>0.05$) were observed in *akshi shopha*, *guruta*, photophobia, burning sensation foreign body sensation, papillae at upper palpebral conjunctiva, follicles at lower palpebral conjunctiva, lacrimal effusion etc. subjective parameters, even though Group I providing 38.09 % more relief than Group II in *akshi shopha*, 29.99 % more relief in photophobia, 31.96 % more relief in burning sensation, 15.85 % more relief in foreign body sensation, 8.64 % more relief in papillae at upper palpebral conjunctiva and 15.55 % more relief in follicles at lower palpebral conjunctiva than Group II. Group II provided 9.5 % more relief than Group I in lacrimal effusion.

## DISCUSSION

Statistically significant relief were found in *kandu*, *ashru*, *picchil srava*, foreign body sensation lacrimal effusion, bulbar hyperaemia, palpebral hyperaemia, burning sensation, gelatinous opacification, papillae at upper palpebral conjunctiva and papillary proliferation with velvety appearance in both groups. But no significant changes were found in follicles at lower palpebral Conjunctiva in both groups.

Inter group comparison of the two groups showed significant difference in Palpebral hyperaemia ($p \leq 0.0001$), papillae at lower palpebral conjunctiva ($p \leq 0.0001$), *Kandu* ($p \leq 0.001$), *picchil srava* ($p \leq 0.001$), papillary proliferation with velvety appearance ($p \leq 0.001$), gelatinous opacification ($p \leq 0.01$), *ashru* ($p < 0.05$), bulbar hyperaemia ($p < 0.05$), horner trantas dots ($p < 0.05$) and blepharitis ($p < 0.05$).

*Thus Shigru Pallava- Madhu Aschyotana* showed statically significant results than standard drug sodium cromoglycate 2 % eye drop. *Shigru Pallava- Madhu Aschyotana* showed better relief in symptoms such as *kandu, picchil srava, ashru* etc. and signs such as foreign body sensation lacrimal effusion, bulbar hyperaemia, palpebral hyperaemia, burning sensation, gelatinous opacification, papillae at upper palpebral conjunctiva, blepharitis, horner trantas dots, papillae at lower palpebral conjunctiva and papillary proliferation with velvety appearance. There is no recurrence of the disease in this group patients during fallow up period.

Relief in the clinical features of the disease was initiated by reduction in inflammation. The study of literature reveals that there may be many possible mechanisms working individually or in combination on the inflammatory process directly or indirectly. *Shigru Pallava-Madhu Ashcyotana* was administered topically which has major advantages, such as increased localized drug effect and avoidance of the first pass effect in which the drug concentration is reduced within the liver before reaching the target tissue. It contain *shigru* having *katu, tikta rasa, laghu, ruksha, tikshna guna, ushna veerya, katu vipaka* and *kapha vata shamaka* property. *Katu rasa* acts as *kapha shamaka, agni deepaka, krimighna, kandu nashaka, chakshu virechana, abhishyanda nashaka, sroto vishodhana, kleda mala upahanti* which alleviates itching, lid and conjunctival swelling and *guruta* (heaviness) and *picchil srava* (ropy discharge).[5] *Tikta rasa* acts as *deepana, pachana, lekhana, vishagna, krimigna* and *kandu daha shamaka, kleda pitta kapha upshoshana* properties, that's why it alleviates *ama,* cleaning the channels and break down the *samprapti* (pathogenesis).[6] *Madhura rasa* and *kashaya rasa* of honey control the over action of *katu rasa* and provide repairing property.

In *Shigru Pallava-Madhu Ashcyotana, madhu* is used in maximum quantity. *Madhu* is considered as best *kapha shamaka dravya.*[7] having *lekhana.*[8] *chedana*[9] properties and it acts as a *yogavahi dravya*[10] which enhance the actions of the *shigru,* provide facility to penetrate the drug at target site (*sukshamamarganusari*).[11] *Chakshushya* property also improve the *bala* of *dristi.* In this formulation, *shigru* and *madhu* was used in the ratio of 1:8

instead of 1:1 ratio to avoid *tikshna* effect of *shigru.* The *Moringa oleifera* dichloromethane extract shows high antioxidant activity.[12] It is also reported as an anti-inflammatory, antimicrobial, antioxidant, anticancer, anti-ulcer, diuretic and anthelminthic.[13] Honey is having antibacterial,[14] antioxidant,[15] antifungal,[16] antiviral.[17,18]

## CONCLUSION

**Following conclusions can be drawn**

- *Shigru Pallava-Madhu Aschyotana* showed better results in comparison to sodium cromoglycate 2 % e/d. in clinical features like *kandu* (itching) and *picchil srava* (ropy discharge), *ashru* (lacrimation), palpebral hyperaemia and papillae at lower conjunctiva, papillary proliferation with velvety appearance, gelatinous opacification, bulbar hyperaemia, horner trantas dots and blepharitis.
- No Recurrence was reported during follow up of 1 month in trial group but in control group all the complaints were reappeared after completion of trial.
- Even 6 months after completion of trial the patients were contacted telephonically and there was no recurrence in any patient.
- Therefore present work provided safe, effective and economic remedy for treating VKC in form of *Shigru Pallava-Madhu Ashcyotana*. Further studies can be carried out with drugs used in VKC other than sodium cromoglycate 2 % E/D to compare their efficacy with *Shigru Pallava-Madhu Ashcyotana.*
- No adverse effects were observed during the study and after completion of trial in *Shigru Pallava-Madhu Ashcyotana*.

**Table no. 1: Effect of therapy on symptoms in Group I (Wilcoxon matched paired).**

| S. No. | Symptoms | Mean | | | % 0f Change | S.D. | S.E. | p | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | D | | | | | |
| 1 | *Kandu* | 3.533 | .8000 | 2.733 | 77.36 | 0.6915 | 0.1262 | < 0.0001 | S |
| 2 | *Ashru* | 1.400 | 0.3667 | 1.033 | 73.79 | 0.6687 | 0.1221 | < 0.0001 | S |
| 3 | *Picchil srava* | 0.9333 | 0.06667 | 0.8667 | 92.86 | 0.6288 | 0.1148 | < 0.0001 | S |
| 4 | *Akshi shopha* | 0.4667 | 0.1333 | 0.3333 | 71.42 | 0.4795 | 0.08754 | 0.0020 | S |
| 5 | *Guruta* | 0.06667 | 0.03333 | 0.03333 | 49.99 | 0.1826 | 0.03333 | > 0.9999 | NS |
| 6 | Photophobia | 0.6667 | 0.2667 | 0.4000 | 59.98 | 0.4983 | 0.09097 | 0.0005 | S |
| 7 | Burning sensation | 0.5333 | 0.06667 | 0.4667 | 87.51 | 0.5074 | 0.09264 | 0.0001 | S |
| 8 | Foreign body sensation | 0.8000 | 0.03333 | 0.7667 | 95.84 | 0.6261 | 0.1143 | <0.0001 | S |

**Table no. 2: Effect of therapy on signs in Group-I.**

| S. No | Signs | Mean | | | % 0f Change | S.D. | S.E. | P | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | D | | | | | |
| 1 | Gelatinous opacification | 1.700 | 0.6333 | 1.067 | 62.76 | 1.048 | 0.1914 | < 0.0001 | S |
| 2 | Papillae at lower conjunctiva | 1.400 | 0.8667 | 0.5333 | 38.09 | 0.5074 | 0.09264 | < 0.0001 | S |
| 3 | Blepharitis | 0.5667 | 0.1333 | 0.4333 | 77.38 | 0.6261 | 0.1143 | 0.0010 | S |
| 4 | Papillary proliferation with velvety appearance | 1.300 | 0.5333 | 0.7667 | 58.98 | 0.5683 | 0.1038 | < 0.0001 | S |
| 5 | Horner trantas dots | 0.8667 | 0.3000 | 0.5667 | 65.39 | 0.8172 | 0.1492 | 0.0002 | S |
| 6 | Papillae at upper palpebral Conjunctiva | 1.400 | 1.000 | 0.4000 | 28.57 | 0.6215 | 0.1135 | 0.0020 | S |
| 7 | Follicles at lower palpebral Conjunctiva | 0.5000 | 0.3667 | 0.1333 | 26.66 | 0.3457 | 0.06312 | 0.1250 | NS |
| 8 | Palpebral hyperaemia | 1.733 | 0.2000 | 1.533 | 88.45 | 0.5074 | 0.09264 | < 0.0001 | S |
| 9 | Bulbar hyperaemia | 1.533 | 0.2667 | 1.267 | 82.64 | 0.6397 | 0.1168 | < 0.0001 | S |
| 10 | Lacrimal effusion | 1.400 | 0.2333 | 1.167 | 83.36 | 0.5307 | 0.09689 | < 0.0001 | S |

**Table no. 3: Effect of therapy on subjective parameters in Group II (Wilcoxon matched paired).**

| S. No. | Symptoms | Mean | | | % 0f Change | S.D. | S.E. | P | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | D | | | | | |
| 1 | *Kandu* | 3.200 | 1.200 | 2.000 | 62.50 | 0.6433 | 0.1174 | < 0.0001 | S |
| 2 | *Ashru* | 1.333 | 0.6667 | 0.6667 | 50.02 | 0.7112 | 0.1298 | < 0.0001 | S |
| 3 | *Picchil srava* | 0.4667 | 0.2000 | 0.2667 | 57.15 | 0.4498 | 0.08212 | 0.0078 | S |
| 4 | *Akshi shopha* | 0.4000 | 0.2667 | 0.1333 | 33.33 | 0.3457 | 0.06312 | 0.1250 | S |
| 5 | *Guruta* | 0.1333 | 0.06667 | 0.06667 | 50.02 | 0.2537 | 0.04632 | 0.5000 | S |
| 6 | Photophobia | 0.6667 | 0.4667 | 0.2000 | 29.99 | 0.4068 | 0.07428 | 0.0313 | S |
| 7 | Burning sensation | 0.6000 | 0.2667 | 0.3333 | 55.55 | 0.4795 | 0.08754 | 0.0020 | S |
| 8 | Foreign body sensation | 0.6667 | 0.1333 | 0.5333 | 79.99 | 0.5074 | 0.09264 | < 0.0001 | S |

**Table no. 4: Effect of therapy in signs in Group-II.**

| S. No. | Signs | Mean | | | % 0f Change | S.D. | S.E. | P | Results |
|---|---|---|---|---|---|---|---|---|---|
| | | BT | AT | D | | | | | |
| 1 | Gelatinous opacification | 1.033 | 0.6667 | 0.3667 | 35.50 | 0.6687 | 0.1221 | 0.0078 | S |
| 2 | Papillae at lower conjunctiva | 1.067 | 1.000 | 0.06667 | 6.25 | 0.2537 | 0.04632 | 0.5000 | NS |
| 3 | Blepharitis | 0.2667 | 0.1333 | 0.1333 | 49.98 | 0.3457 | 0.06312 | 0.1250 | NS |
| 4 | Papillae with velvety appearance | 1.067 | 0.8333 | 0.2333 | 21.87 | 0.4302 | 0.07854 | 0.0156 | S |
| 5 | Horner trantas dots | 0.3667 | 0.2000 | 0.1667 | 45.46 | 0.3790 | 0.06920 | 0.0625 | NS |
| 6 | Papillae at upper palpebral Conjunctiva | 1.033 | 0.8333 | 0.2000 | 19.36 | 0.4068 | 0.07428 | 0.0313 | S |
| 7 | Follicles at lower palpebral Conjunctiva | 0.6000 | 0.5333 | 0.06667 | 11.11 | 0.2537 | 0.04632 | 0.5000 | NS |
| 8 | Palpebral hyperaemia | 1.367 | 0.9667 | 0.4000 | 29.26 | 0.4983 | 0.09097 | 0.0005 | S |
| 9 | Bulbar hyperaemia | 1.433 | 0.5333 | 0.9000 | 62.81 | 0.5477 | 0.1000 | < 0.0001 | S |
| 10 | Lacrimal effusion | 0.9333 | 0.06667 | 0.8667 | 92.86 | 0.7303 | 0.1333 | < 0.0001 | S |

**Table No. 5: Effect of therapy on symptoms in intergroup comparison (Mann whitney test).**

| S. no | Symptoms | Mean | | SD | | SE | | U | P | Results |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $G_I$ | $G_{II}$ | $G_I$ | $G_{II}$ | $G_I$ | $G_{II}$ | | | |
| 1 | *Kandu* | 2.733 | 2.000 | 0.6915 | 0.6433 | 0.1262 | 0.1174 | 678 | 0.0002 | S |
| 2 | *Ashru* | 1.033 | 0.6667 | 0.6687 | 0.7112 | 0.1221 | 0.1298 | 578 | 0.0403 | S |
| 3 | *Picchil srava* | 0.8667 | 0.2667 | 0.6288 | 0.4498 | 0.1148 | 0.08212 | 676 | 0.0002 | S |
| 4 | *Akshi shopha* | 0.3333 | 0.1333 | 0.4795 | 0.3457 | 0.08754 | 0.06312 | 540 | 0.0710 | NS |
| 5 | *Guruta* | 0.03333 | 0.06667 | 0.1826 | 0.2537 | 0.03333 | 0.04632 | 465 | 0.5702 | NS |
| 6 | Photophobia | 0.4000 | 0.2000 | 0.4983 | 0.4068 | 0.09097 | 0.07428 | 540 | 0.0956 | NS |
| 7 | Burning sensation | 0.4667 | 0.3333 | 0.5074 | 0.4795 | 0.09264 | 0.08754 | 510 | 0.3000 | NS |
| 8 | Foreign body sensation | 0.7667 | 0.5333 | 0.6261 | 0.5074 | 0.1143 | 0.09264 | 534 | 0.1595 | NS |

**Table No. 6: Effect of therapy on signs in intergroup comparison.**

**(Mann Whitney test)**

| S. n | Signs | Mean | | SD | | SE | | U | P | Results |
|---|---|---|---|---|---|---|---|---|---|---|
| | | $G_I$ | $G_{II}$ | $G_I$ | $G_{II}$ | $G_I$ | $G_{II}$ | | | |
| 1 | Gelatinous opacification | 1.067 | 0.3667 | 1.048 | 0.6687 | 0.1914 | 0.1221 | 635 | 0.0025 | S |
| 2 | Papillae at lower conjunctiva | 0.5333 | 0.06667 | 0.5074 | 0.2537 | 0.09264 | 0.04632 | 660 | <0.0001 | S |
| 3 | Blepharitis | 0.4333 | 0.1333 | 0.6261 | 0.3457 | 0.1143 | 0.06312 | 559 | 0.0334 | S |
| 4 | Papillae with velvety appearance | 0.7667 | 0.2333 | 0.5683 | 0.4302 | 0.1038 | 0.07854 | 667 | 0.0003 | S |
| 5 | Horner trantas dots | 0.5667 | 0.1667 | 0.8172 | 0.3790 | 0.1492 | 0.06920 | 575 | 0.0213 | S |
| 6 | Papillae at upper palpebral Conjunctiva | 0.4000 | 0.2000 | 0.6215 | 0.4068 | 0.1135 | 0.07428 | 516 | 0.2086 | NS |
| 7 | Follicles at lower Conjunctiva | 0.1333 | 0.06667 | 0.3457 | 0.2537 | 0.06312 | 0.04632 | 480 | 0.4014 | NS |
| 8 | Palpebral hyperaemia | 1.533 | 0.4000 | 0.5074 | 0.4983 | 0.09264 | 0.09097 | 816 | < 0.0001 | S |
| 9 | Bulbar hyperaemia | 1.267 | 0.9000 | 0.6397 | 0.5477 | 0.1168 | 0.1000 | 586.50 | 0.0203 | S |
| 10 | Lacrimal effusion | 1.167 | 0.8667 | 0.5307 | 0.7303 | 0.09689 | 0.1333 | 556 | 0.0781 | NS |

**Figure no. 1: Before treatment.**

**Figure no. 1: After treatment.**

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