Original Article

Indian Journal of Ancient Medicine and Yoga
Volume 8 Number 1, January - March 2015
https://dx.doi.org/10.21088/ijamy.0974.6986.8115.1

# Efficacy of Jatyadi tail Pratisarana in Mukhapak (Stomatis)

**Pandey Ajay Kumar*, Sharma Arun Kumar****

**Abstract**

People are suffering from Mukhapak mostly the young generation due to busy and stressful life also other factors like irregular timing of diet and sleep, eating spicy and fast food, chewing of tobacco and Gutakhas. Aggravation of tridoshas mainly pitta corrupt the raktadhatu and causes Mukhapak (stomatitis).

During the study project detailed study of previous work was done. All available information about materials was collected and studied in detail. For this study sixty patients were selected randomly and divided into two groups:

Group A-Trial group & Group B- Control group

Group A (trial group): Total number of patients are thirty. They were treated with Tab. Kamdudha systemically and JatyaditailPratisaran (locally).

Tab. Kamdudha 500 mg. three times a day for seven days

JatyaditailPratisaran 2-3 ml four times a day for seven days

Group B (control group): Total number of patients are thirty. They were treated with Tab. Kamdudha systemically.

Tab. Kamdudha 500 mg three times a day for seven days.

Observations recorded for seven days with alternate day follow up. A special case paper was made for the study in which observations were made in tabular form and effect of Jatyaditail Pratisaran was analysed.

According to observation statistical analysis was done. It showed that the above said Jatyaditailpratisaran with Tab. Kamdudha is more effective in Mukhapak and gives better result than Tab. Kamdudha alone.Jatyaditail is tridoshashamak, vranashodhak and vranaropak .JatyaditailPratisaran can be done easily for oral cavity. So it can be routinely used by patients of Mukhapak.

**Keywords:** Mukhapak(stomatitis), Pratisarana and Jatyaditail

## Introduction

Ayurved is an ancient medical science, which not only cures the disease but it deals with prevention and promotion of health and longevity.Ayurveda is described into eight divisions called as 'AshtangaAyurved' by ancient Ayurvedic surgeons and physicians. 'Shalakyatantra' is one of them.

Mukhapak (stomatitis) is one of the most common disorders of oral cavity and seen very commonly in day to day medical practice. Mukhapak(stomatitis) means inflammation of buccal mucosa which appears red, swollen and tender with excessive salivation, sometimes tendency to bleed with ulceration. It is found in all age groups and both the sexes.

*Purpose of selection of topic*

1. Number of patients suffering from stomatitis is increasing day to day.

**Author's Affiliation:** *Lecturer, Shalakya Tantra, **Attached M.O. Kayachikitsa, Govt. Ayurvedic College, Gurukul Kangri, Haridwar, Uttarakhand, India.

**Reprint's Request:** Dr. Pandey Ajay Kumar, Lecturer, Shalakya Tantra, Govt. Ayurvedic College, Gurukul Kangri, Haridwar, Uttarakhand, India.

E-mail: pandeysavarna@gmail.com

2. In modern medical science the nutrition diet and vitamins, steroids and anesthetic local application is either taking more time or not giving satisfactory results or giving recurrences.
3. Jatyadi tail is a prescribed drug for vranashodhan and ropan in Ayurved.
4. Jatyadi tail does not have burning sensation as other modern drugs have after local application.
5. Jatyadi tail is affordable to all income groups of patients.
6. It is easy to apply locally with the help of pichu.

*Mukhapak*

Acharya Charaka and Sushruta has mentioned four types of Sarvasar.

1. Vataj Sarvasar
2. Pittaj Sarvasar
3. Kaphaj Sarvasar
4. RaktajSarvasar

Acharya Vagbhata has described 5 types of Sarvasar

1. Vataj Sarvasar
2. Pittaj Sarvasar
3. Kaphaj Sarvasar
4. Raktaj Sarvasar
5. Sannipatik Sarvasar

*Vataj Sarvasar/Mukhapak*

Vataj Sarvasar is one of the generalized mouth disease in which mouth is covered with painful blisters caused by vata.Also dryness of mouth,roughness, shifting pain, salivation becomes cold, dribbling of saliva, piercing and tearing pain is present.

*Pittaj Sarvasar/Mukhapak*

In this type mouth is covered with yellow coloured, burning and small blisters which are caused by pitta, thirst, fever, eruption, burning sensation, inflammation, tearing sensation with appearance of the blisters of vaious colours except white are present.

*Kaphaj Sarvasar/Mukhapak*

Mouth is covered with the blisters of same colour having itching sensation and mild pain (is also present) along with the sliminess, anorexia,stiffness,excessive salivation, nausea, drowsiness. These symptoms are caused by kapha.

*Raktaj Sarvasar/Mukhapak*

The disease produsedby Rakta shows the same symptoms as produced by pitta.

*Sannipatik Sarvasar/Mukhapak*

Sannipatik Sarvasar is a type in which all the symptoms caused by vata,pitta and kapha are found together.

*Stomatitis*

An inflammatory condition of the mucous membrane of the oral mucosa with or without ulceration is referred as stomatitis.

Several varieties of stomatitis are recognizable. Injury to the oral mucosa from whatever cause, may result in a localized defect of the surface in which the covering epithelium is destroyed leaving an inflamed area of exposed connective tissue. Such defects are called as ulcers or erosion, the latter term sometimes used to describe a superficial ulcer. Ulceration is most common lesion of the oral mucosa and it is a manifestation of many local and systemic disorders.

Oral ulceration may be classified on an epidemiological basis and the main causes are listed in given table.

*Treatment*

Nidan Parivarjan Chikitsa is of prime importance to arrest the further progress of disease. After finding etiological factors (Hetu

Sevana) , if we eliminate them from our Aahar and Vihar, recurrence of the disease never occurs. So alongwithYuktivyapashraya and DaivavyapashrayaChikitsa, we should always advice patients to avoid etiological factors including dietary, professional and psychological factors.

In Mukhapak, the patient should be given raktamokshana therapy, errhines and purgatives.Kawalgraha therapy (keeping drugs in the mouth in paste form)prepared of cow's urine, oil, ghee, honey and milk should be administered to patient. Mouth wash (mukha-dhavana)with cold decoction of drugs having astringent and bitter taste is useful in this condition.

In Mukhapak, gargling the mouth with the decoction of triphala, patha, mridvika, and tender sprouts of jati added with honey should be done or may be chewed and or spat out by the drugs of Kutheradi Gana.

In Mukhapak, caused by anila (vata) powder of Krishna patu and ela should be rubbed; oil prepared with vata mitigating drugs is beneficial for gargling and nasal errhines. In those caused by pitta and asra (blood) treatments which mitigate pitta and asra (blood) should be done.In that caused by kapha, treatments which mitigate kapha is required; the eruption which are hard and static should be scraped with (rough) leaves of tree like saka etc. In case of that caused by sannipatika , treatment should be to the dosa predominant in order of degree.

*Modern Treatment*

There is no specific treatment for recurrent aphthous stomatitis. Tetracycline mouth wash (250 mg per 65 ml) used for four times daily for 5 to 7 days, relieves the pain, reduces the lesions and the healing time. Steroid application of 1.5 percent cortisone applied locally and hydrocortisone acetate, antibiotic lozenges also are effective to a little extent. Chemically cautery reduces pain with no other beneficial effects.

*Clinical study*

## Aims and objectives

1) To study Mukhapakvyadhi according to Ayurved and stomatitis according to Modern medical science.
2) To study efficacy of Jatyadi tail pratisarana in Mukhapak (stomatitis) vyadhi.

## Methodology

Prospective, single blind, controlled, randomized, parallel study is conducted in group A and B. Each group consist of thirty patients.

*Place of work*

Ayurvedic Rugnalaya of Mahavidyalaya.

*Selection criteria*

All the patients of Mukhapak (stomatitis) attended O.P.D. at Ayurvedic Rugnalaya of Mahavidyalaya were selected irrespective of sex, religion, economical status, education, occupation etc.

*Inclusion criteria*

1. Patient suffering from Mukhapak (stomatitis).
2. Patient age group of ten to sixty years irrespective of sex.

*Exclusion criteria*

1. Patient not willing for trial.
2. Age of patient below ten years and above sixty years.
3. Congenital anomaly of mouth.
4. Traumatic wound of mouth.

5. Syphilis.
6. Ulcers formed due to malignancy.
7. Immunosuppressive disease.

*Group A- Trial group*

Total thirty patients were selected in this group. Treatment was given as follows:

Drug Dosage Route of administration Duration

Tab.Kamdudha 500 mg three times per day systemic Seven days

Anupan Jal

Jatyadi tail 2-3 ml four times per day local Seven days

*Group B-Control group*

Total thirty patients were selected in this group. Treatment was given as follows:

Drug Dosage Route of administration Duration

Tab. Kamdudha 500 mg three times per day systemic Seven days

Anupan Jal

Follow up was done on alternate day for seven days and clinical observations were recorded in tabular form. The subjective gradation of symptom was done. Intensity of each sign was calculated and was compared with control group.

When ever necessary the following investigations were performed for the purpose of assessing general condition of patient and excluded other pathologies.

*Ingredients of Kamdudhavati*

1. Swarnagairika (red ochre) 2 part
2. Shankhajiraka (talc) 1 part
3. Guduchisatva *(Tinospora cordifolia* starch) 1 part
4. Kapardika (Cypraeamoneta) 1 part
5. Shankha (Turbinellapyrum) 1 part
6. Shauktikabhashma (Ash of Pinctada vulgaris) 1 part
7. Pravalapishti (Coralliumrubrum)1 part
8. Bhrungaraj (*Eclipta alba*) used as bhawanadravya.

*Contents of jatyadi tail*

1. Jati Pallava (*Jasminum officinale*)
2. Nimba Pallava (*Azadirachta indica*)
3. Patola Pallava (*Trichosanthes dioica*)
4. Naktamal Pallava (*Pongammia pinnata)*
5. Naktamal Bija (*Pongammia pinnata)*
6. Siktha (Beewax)
7. Kustha (*Saussurea lappa*)
8. Madhuk *Glycerrhiza glabra)*
9. Haridra (*Curcuma longa)*
10. Daruharidra (*Berberis aristata*)
11. Katurohini (*Picrorrhiza kurroa*)
12. Manjishtha *(Rubia cordifolia*.)
13. Padmak ( *Prunus cirasoidus*)
14. Lodhra (*Symplocos racemosa*).
15. Abhaya (*Terminalia chebula*).
16. Neelotpal (*Nymphaea nouchali*.)
17. Tutthak (Copper Sulphate or blue vitriol)
18. Sariva (*Hemidesmus indicus*.)
19. TilaTaila (*Sesamum Orientale Linn*.)

*Probable mode of action*

Pratisaran (gharshana) in oral cavity stimulates taste buds and promotes gustatory functions. Chemicals stimulates receptors in test buds impulses conveyed from the receptors to salivary nuclei in the brain stemreturning para sympathetic impulse in fibre of facial and glossopharyngeal nerves stimulate secretion of saliva- ptylin present in saliva acts on medicine, absorption of medicine through mucous membrane of buccal cavity especially sublingual route by simple diffusion and active transport. Microcidal property of medication used help to reduce bacterial flora in mouth and prevent halitosis, gingivitis, plaque, cavities and gum diseases. Mouth an

area of multiple cranial nerve innervation gets stimulated by the potency of medicine.

*Clinical assessment*

The sign and symptoms are assessed by adopting suitable scoring method. The subjective gradation of symptoms was done as per Visual Analog scale was applied for gradation.

*Statistical analysis between two groups by unpaired t test*

H0: There is no significant difference of improvement in the symptoms of Mukhapak (stomatitis) vyadhi in Trial group as compared to Control group.

i.e. H0: Null hypothesis: ¼trail = ¼control

H1: There is significant difference or improvement in the symptoms of Mukhapak (stomatitis) vyadhi in Trial group as compared to Control group.

i.e. H1: Alternative hypothesis: ¼trail '" ¼control or ¼trail < ¼control.

Total number of patients are 30 in each group.

t value at 5% significance level is 2.0017 at df 58.

*Pain at affeced site*

The table shows the statistical analysis for Pain at affected site in both groups where t score shows the difference is highly significant at day 7th day. It means that the said therapy used in trial group for Pain at affected site is effective in this study group as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.57 | 1.90 | 1.13 | 0.23 |
| Group B | 2.77 | 1.97 | 1.33 | 0.63 |

| Pain at affected site | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.40 | 0.12 | 3.36 | <0.01 |

*Burning sensation*

The table shows the statistical analysis for Burning Sensation in both groups where t score shows the difference is significant at day 7th day. It means that the said therapy used in trial group for Burning Sensation is effective in this study group as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.33 | 1.73 | 1.03 | 0.17 |
| Group B | 2.27 | 1.73 | 1.10 | 0.40 |

| Burning Sensation | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.23 | 0.11 | 2.04 | <0.05 |

*Excessive salivation*

The table shows the statistical analysis for Excessive salivation in both groups where score shows the difference is significant at day 7th day. It means that the said therapy used in trial group for Excessive salivation is more effective as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.17 | 1.40 | 0.83 | 0.10 |
| Group B | 2.13 | 1.53 | 0.93 | 0.40 |

| Excessive salivation | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.3 | 0.1352 | 2.22 | <0.05 |

*Difficulty in chewing*

The table shows the statistical analysis for Difficulty in chewing in both groups where score shows the difference is significant at 7th day. It means that the said therapy used in trial group for Difficulty in chewing is more effective as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.03 | 1.53 | 0.80 | 0.13 |
| Group B | 2.13 | 1.40 | 0.93 | 0.40 |

| Difficulty in chewing | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.267 | 0.1298 | 2.05 | <0.05 |

*Ulceration*

The table shows the statistical analysis for Ulceration in both groups where t-score shows the difference is highly significant at 7th day. It means that the said therapy used in trial group for Ulceration is more effective as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.30 | 1.67 | 0.93 | 0.13 |
| Group B | 2.07 | 1.63 | 0.90 | 0.50 |

| Ulceration | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.367 | 0.1221 | 3.00 | <0.01 |

*Redness*

The table shows the statistical analysis for Redness in both groups where t-score shows the difference is significant at 7th day. It means that the said therapy used in trial group for Redness is more effective as compared to control group.

| Mean Score in each group | 1st | 3rd | 5th | 7th |
|---|---|---|---|---|
| Group A | 2.50 | 1.77 | 1.13 | 0.33 |
| Group B | 2.20 | 1.53 | 1.07 | 0.70 |

| Redness | | | |
|---|---|---|---|
| Mean Difference | SE | t value | P |
| 0.37 | 0.16 | 2.36 | <0.05 |

## Discussion

Considering the literature review it is the vitiation of pitta in Amashaya with kapha and vata corrupts raktadhatu leads to Mukhapak (stomatitis).

Pain at affected site develop due to vitiation of vata.

Burning sensation is due to vitiation of pitta.

Excessive salivation is due to vitiation of kapha.

Difficulty in chewing is due to vitiation of vata and kapha.

Ulceration is due to vitiation of pitta.

Redness is due to vitiation of pitta, rakta and vata.

So, it can be said that there is involvement of all the three doshas in Mukhapak.

Control drug used in this project is Tab. Kamdudha, which is tridoshashamak and Trial drug used in this project is Jatyadi Tail which is shothahar, vranashodhak and vranaropak.

*Action of Kamdudhavati*

When patient takes Tab. Kamdudha it goes to stomach and digested by gastric juice. It contains the active ingredients, which acts on vitiated pachak pitta, kledakkapha and samanavata by their active principle and active potency.

*Action on vitiated Pachak pitta*

Swarnagairik-Madhur, kashay rasa and sheetaveerya pacifies pitta.

Shankhajirak-Madhur, kashay rasa, sheetaguna and madhurvipak pacifies pitta.

Guduchi- Tikta, kashay rasa and madhurvipak pacifies pitta.

Kapardika-Madhur rasa and rookshaguna pacifies pitta.

Shankha-Madhur rasa and rookshaguna pacifies pitta.

Shukti-Madhur rasa, madhurvipak and sheetaveerya pacifies pitta.

Praval-Madhur rasa, rookshaguna, madhurvipak and sheetaveerya pacifies pitta.

Bhrungaraj-Tikta rasa and rookshaguna pacifies pitta.

*Action on vitiated kledakkapha*

Swarnagairik-Kashay rasa and katuvipak pacifies kapha.

Shankhajirak-Kashay rasa pacifies kapha.

Guduchi-Kashay rasa and ushnaguna pacifies kapha.

Kapardika-Rookshaguna, katuvipak and

ushnaveerya pacifies kapha.

Shankha-Rooksha, teekshnaguna, usnaveerya and katuvipak pacifies kapha.

Shukti-Rooksha and laghuguna pacifies kapha.

Praval-Rooksha and laghuguna pacifies kapha.

Bhrungaraj-Katu, tikta rasa, rooksha, laghuguna, usnaveerya and katuvipak pacifies kapha.

*Action on vitiated samanvata*

Swarnagairik-Madhur rasa pacifies vata.

Shankhajirak-Madhur rasa and madhurvipak pacifies vata.

Guduchi-Usnaveerya and madhurvipak pacifies vata.

Kapardika-Madhur rasa and usnaveerya pacifies vata.

Shankha-Madhur rasa and usnaveerya pacifies vata.

Shukti-Madhur rasa and madhurvipak pacifies vata.

Praval-Madhur rasa and madhurvipak pacifies vata.

Bhrungaraj-Usnaveerya pacifies vata.

So, formation of vitiated dhatu stopped and helps to cure the Mukhapak.

The trial drug used in this project is Jatyaditail which is having antibacterial, antifungal and anti inflammatory action. Jatyaditail is also vranashodhak and vranaropak and reduces the pain, burning sensation, excessive salivation, ulceration and redness.

*Action of Jatyadi Tail*

Jatyadi Tail acts locally on vrana as:

*1. Action on oral mucosa*

Base of Jatyadi Tail is Tila Tail, it has the Teekshna, Sookshma, Vyavayi,Vishad,Guru, Sara and Vikashiguna. By Vyavayi, Sara and Sookshmaguna it get readily absorbed in oral mucosa and reached at the level of rakta and mamsadhatu. Vikashiguna of Til Tail free the bandhan of rakta and mamsadhatu. Teekshnaguna cleans the vrana and Vishadguna helps to shed off the necrosed tissue. Tila Tail also play a role of vehicle by which active principles of other drugs also get absorbed and their action could be obtained.

*2. Tridosha shaman*

JatiPallava, PatolaPallava, Padmak, Abhaya, Neelotpal and Sariva have the properties of tridosha shaman. So ,they pacifies the tridosha and help to cure the Mukhapak.

*3. Vranashodhan and Vrana Ropan*

Jati Pallava, Nimba Pallava, Patola Pallava, Naktamal Pallava, Siktha, Kushtha, Madhuk, Haridra, Daruharidra, Katurohini, Manjishtha, Padmak, Lodhra, Abhaya, Neelotpal and Sariva all these have the properties of vranashothahar, shodhan and ropan. Where asTutthak has antibacterial and antifungal action.

*As per observations found*

Age group of patient twenty to fourty years are mostly affected with Mukhapak (stomatitis) about fourty percent of total sample size.

Patient of both sex are equally affected.

Hindu population is more affected with Mukhapak.

House wife and students were more affected with Mukhapak(stomatitis) in comparision to other occupation. Pain at affected site was almost cured on seventh day in trial group.

Burning sensation was almost cured on seventh day in trial group.

Excessive salivation was almost cured on seventh day in trial group.

Difficulty in chewing was almost cured on seventh day in trial group.

Ulceration was almost cured on seventh day

in trial group.

Redness was almost cured on seventh day in trial group.

When we compare trial group with control group we found:

Pain at affected site was almost cured on seventh day in both the group but in trial group improvement was more as compared to control group.

Burning sensation was more cured in trial group on seventh day as compared to control group.

Excessive salivation was more cured in trial group on seventh day as compared to control group.

Difficulty in chewing was more cured in trial group on seventh day as compared to control group.

Ulceration was more cured in trial group on seventh day as compared to control group.

Redness was more cured in trial group on seventh day as compared to control group.

*Summary*

People are suffering from Mukhapak mostly the young generation due to busy and stressful life also other factors like irregular timing of diet and sleep, eating spicy and fast food, chewing of tobacco and Gutakhas.

Aggravation of tridoshas mainly pitta corrupt the raktadhatu and causes Mukhapak (stomatitis).

During the study project detailed study of previous work was done. All available information about materials was collected and studied in detail.

For this study sixty patients were selected randomly and divided into two groups:

Group A-Trial group

Group B- Control group

*Group A (trial group)*

Total number of patients are thirty. They were treated with Tab. Kamdudha systemically and Jatyaditail Pratisaran (locally).

Tab. Kamdudha 500 mg. three times a day for seven days

Jatyaditail Pratisaran 2-3 ml four times a day for seven days

*Group B (control group)*

Total number of patients are thirty. They were treated with Tab. Kamdudha systemically.

Tab. Kamdudha 500 mg three times a day for seven days.

Observations recorded for seven days with alternate day follow up. A special case paper was made for the study in which observations were made in tabular form and effect of JatyaditailPratisaran was analysed.

According to observation statistical analysis was done.

It showed that the above said Jatyaditailpratisaran with Tab. Kamdudha is more effective in Mukhapak and gives better result than Tab. Kamdudha alone.

Jatyaditail is tridoshashamak, vranashodhak and vranaropak.

JatyaditailPratisaran can be done easily for oral cavity. So it can be routinely used by patients of Mukhapak.

## Conclusion

As per the observations and discussion following conclusion can be put forward:

1. Jatyaditail Pratisaran is very effective in Mukhapak(stomatitis) and is resolved faster without any complication.

2. Pain at affected site, burning sensation, excessive salivation, ulceration and redness were definitely cured well in trial group as compared to control group.

3. Mukhapak (stomatitis) is more common in age group of patients twenty to fourty years of age group and both the sex.

4. Mukhapak is more common in students

and house wife in comparision to other occupation.

5. The results found with Jatyaditail Pratisaran are encouraging and can be used routinely in everyday practice for faster and safe recovery.

**References**


1. Charakasamhita with Chakrapani Tika. Editor Vd. Yadavji Trikamji Acharya. Coukhamba Orientalia; 1984.
2. Charakasamhita. Editor Kashinath Shastri and Dr. Gorakhanath Caturvedi. Varanasi: Coukhambha Bharti Academy.
3. Sushrutasamhita. Editor Kaviraj Ambikadutta Shastri. Chaukhamba Sanskrit Samsthana; 2002.
4. Ashtanga Hridaya With Arundatta Tika. Editor Pandit Hari Paradkar. Chaukhamba Publication; 2002.
5. Ashtanga Sangraha. Editor Vd. Anant Damodar Athavale. 2000.
6. Madhav Nidana With MadhukoshaTika. Editor Narendranath Shastri. Motilal Banarasidas Publication; 1979.
7. Sharangadhara Samhita. Chaukhamba Orientalia; 2005.
8. Yogaratnakara. Editor Vd Laxmipati Shastri. Chaukhamba Publication; 2005.
9. Bhaishajya Ratnavali. Editor Kaviraj Ambikadatta Shastri Chaukhamba Publication, 18th edition.
10. Bharata Bhaishajya Ratnatkar (Khanda 4), 2nd edition. Editor Naginadas Chaganlal Saha B. Delhi: Jain Publishars; 1928.
11. Bhavaprakasha Nighantòu. Editor Pandit Sri Visvanath Dvivedi Shastri.
12. Sartha Bhavaprakasha. Editor Vd PG Nanal.
13. Kaiyadeva Nighantòu, 1st edition. Editor PV Sharma and Guruprasad Sharma. Chaukhamba Publication; 1979.
14. Madanapal Nighantu. Mumbai: Khemaraj Shrikrishanadasa Publication; 1998.
15. Raja Nighanòtu. Pandit Narahari edited by Dr. Indradeva Tripathi, 1st edition. Varanasi: Krishanadasa Academy.
16. Dravyagunòavijnana. Dr. Vishnu Mahadev Gogate.
17. Bhaishajyakalpanavidnyanam. Dr Ramacandra Reddy, 2nd edition. Chaukhamba Publication; 2001.
18. Indian Matericamedica. Editor Dr KM Nadakarni, 3rd edition. Popular Publication.
19. Grey's Anatomy. Willams / Bnister.
20. Principles of anatomy and physiology. Gerard Tortora, 8th edition.
21. Human physiology. CC Catterji. 1982.
22. Textbook of Dermatology Vol. 1 and 2. Editor Rooks and others. Blackwell Scientific Publication.
23. Pharmacology and Pharmacotherapeutics. Satoskar, Kale, Bhandarkar.
24. Indian Medicinal plant. Lt Col KR Kirtikar & Major BD Basu.
25. The chemistry of bees. Joel Loveridge.
26. Ayurveda Shabdakosha. Edited and translated by Venimadhav Shastri Joshi. Bombay: Maharashtra Sahitya Sanskrit Mandala; 1968.
27. Methods of Biostatistics. BK Mahajan. 1997
28. Scott Brown's edition on.
29. Ear, Nose,Throat surgery. John R Cherry
30. Disease of Ear, Nose,Throat. Ballenger.
31. Textbook of Disease of Ear, Nose,Throat. Dhingra.
32. Textbook of Disease of Ear, Nose,Throat. Bhargava.
33. Textbook of Disease of Ear, Nose,Throat. Mohd. Makbool.
34. Websites – www.google.com, www.ayurplant.com, www.himalayahealth.