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Study to evaluate the efficacy of *Vibhitaka Majja Taila Nasya* in Premature Graying of Hair (*Akaal Palitya*) - A Clinical Study

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A B S T R A C T

Incidence of Premature Graying is increasing day by day. Incidence as per W.H.O is largely between the age group of 25-30 years. Hair colour contributes immensely in physical appearance and self-perception. It is well known that Premature Graying of Hair results from a reduction of pigment, but exact underline cause for this is still mystery for medical fraternity. In contemporary medical science, there is as such no effective treatment for premature graying of hair but various previous researches in Ayurveda have shown the potential in its prevention and management. *Acharya Charaka* and *Acharya Sushruta* have quoted Premature Greying of Hair as *Akaal Palitya* and mentioned it as *Ras Dhatu Pradosaja Vikara*.[5,6] In Ayurveda classics various external and internal medications have been described for this disease and *Vibhitaka Majja Taila Nasya* is one of them mentioned by *Acharya Sharangdhara*.[7] So, on the basis of classical references and researches *Vibhitaka Majja Taila Nasya* has been selected for this study and a clinical trial was conducted on 40 patients with Greying hair. These patients were divided into 2 groups. Group A (trial group - *Vibhitaka Majja Taila Nasya)* and Group B (control group). After 90 days of clinical, results showed significant improvement in subjective parameter like colour of hair, dry splitted hair, burning on scalp.as well as on objective parameter like GSS score and Serum Ferritin level.

Key words: *Nasya, Palitya, Premature Graying of Hair, Rasa Dhatu Pradosha, Vibhitaka Majja Tail*

INTRODUCTION

The incidence of Premature Greying of Hair is increasing, particularly in tropical and developing countries. The prevalence of this disorder is higher among females as compared to males. Incidence as per W.H.O is largely between the age group of 25-30 years.

The term "Premature Greying of Hair" is used when greying begins before the usual age of onset.[1] Hair is said to grey prematurely when it occurs before the age of 20 in Caucasians, 25 in Asians and 30 in Africans.[2,3] Increasing social and economical imbalance, sedentary lifestyle, mental stress and pollution are some important factors responsible for the Graying of Hair. It also became most important cause of psychosomatic disorders.[4]

Acharya Charaka and *Acharya Sushruta* have quoted Premature Greying of Hair as *Akaal Palitya* and mentioned it as *Ras Dhatu Pradosaja Vikara*.[5,6] In Ayurveda classics various external and internal medications have been described for this disease and *Vibhitaka Majja Taila Nasya* is one of them mentioned by *Acharya Sharangdhara*.[7]

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So, on the basis of classical references and researches *Vibhitaka Majja Taila Nasya* has been selected for this study.

AIM AND OBJECTIVES

To evaluate the efficacy of *Vibhitaka Majja Taila Nasya* in Premature Graying of Hair (*Akaala Palitya*)

MATERIALS AND METHODS

Research question

What is the effect of *Vibhitaka Majja* Oil in the Premature Greying of Hair (*Akaal Palitya*)

Hypothesis

Null hypothesis - H0 - There is no significant effect of *Vibhitaka Majja Taila* in the management of Premature Greying of Hair (*Akaal Palitya*)

Alternative hypothesis - H1 - There is a significant effect of *Vibhitaka Majja Taila* in the management of Premature Greying of Hair (*Akaal Palitya*)

Study Design

This study was designed as a clinical study and the sample was selected by a simple random sampling technique.

Sample Size: Total 40 patients (20 patients in each group).

Duration of study: 3 months

Place of study: Department of Swasthvritta, Pt. Khushilal Sharma Govt. (Autonomous) Ayurveda College and Institute, Bhopal.

Criteria for diagnosis

The patients presented with Graying of Hair with onset before the age of 25 years.

Criteria for inclusion

1. *Palitya* patients between the age group of 15 – 25 years of either sex.

2. Patients who have not used hair dye/mehndi for the last 6 months.

3. Patients who are willing to sign the written consent form.

Criteria for exclusion

1. Patients with age below 15 years and, above 25 years.

2. Patients with pernicious anemia and any other autoimmune disease.

3. Known cases of hormonal, hepatic, and renal disorders.

4. Patients on chemotherapy.

5. Patients use dyes and mehndi regularly.

6. Pregnant and Lactating women

Investigations

Serum Ferritin was done before and after Treatment.

(Blood sample was collected upto 3 ml as per requirement)

Grouping

Group A - Trial group

20 patients of this group were advised to administer 2-2 Drops of *Vibhitaka Majja Taila Nasya* in each nostril [*Pratimarsha Nasya*] twice a day preferably in the morning and evening time.

Group B - Placebo control group

20 patients of this group were advised to administer 2-2 Drops of normal Saline Water *Nasya* in each nostril twice a day preferably in the morning and evening time.

All the patients of both groups were advised to avoid *Pitta Vardhaka Ahara Vihara*, junk food, oily food as well as harmful chemical cosmetic products like shampoo, oil, gel, etc. on hair.

Assessment criteria

The assessment was done based on subjective and objective parameters before, after treatment.

Subjective Parameter

To assess the subjective features of Premature Greying of Hair, clinical symptoms which so ever have been presented by the patients have been graded into four grades (0-3) scale based on severity.

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Objective Parameter

- GSS Score (Greying Severity Score)
- Serum ferritin

Ethical clearance

This study was started after the approval of the Institutional ethical committee of Pt. Khushilal Sharma Government Autonomous Ayurvedic College and Institute, Bhopal dated 29-12-2020. Before starting the trial written informed consent was taken with the freedom to withdraw from the study at any time without giving any reason.

CTRI Registration:

Present clinical study was registered in Clinical Trial Registry-India (CTRI). The registration number of present study is CTRI/2021/07/035015.

OBSERVATION AND RESULT

In this present study total 40 patients of *Akaal Palitya* were registered, 20 in each group and this study was continued with 40 patients.

Age: In present study majority of the patients 62.5 % are in age group of 23 - 25 years followed by 35 % in the age group of 19-22 years and 2.5 % in the age group of 15-18 years.

It may be due to dominance of *Pitta* in middle age and *Palitya* has been counted as characters of *Pitta Prakriti*.[8] (Table no.1)

Sex: Maximum patients i.e., 65% were female and rest were male. This observation indicates that *Akaal Palitya* is more common in females than males. Ayurveda says that the females are in general, dominated by the *Agni Tatva*, whereas, naturally they are prone to more mental tension and worries owing to their sensitive and emotional nature due to this reason can cause *Pitta Prakopa* creates *Palitya*. Muhammad Saad *et al.* reported that prevalence of Premature Greying of Hair was higher among females as compared to males. (Table no.2)

Education and Occupation: Maximum i.e., 52.5 % patients were Graduate, 2.5% patients having High school and Higher secondary education, 37% patients

were Post Graduate and 2.5% patients having Primary and Middle School education. It may be due to most of the cases belong to Pt. Khushilal Sharma Govt. Ayurveda College, Bhopal. (Table no.3) On considering the nature of occupation, it was found that maximum i.e., 95% patients were student, 2.5% patients were Agriculture work, 2.5% patients were in unemployed (Table no.4)

Prakriti: In the present study 55% patients were having *VP Prakrati*, 25% patients were having *VK Prakriti*, 20% patients were having *PK Prakriti*. This reveals that incidence of disease is maximum when there is dominance of *Vata* and *Pitta* in the body constitution. *Akaal Palitya* is a *Vata Pittaj Vyadhi*. So persons of *Vata Pittaj Prakriti* are more prone for the occurrence of this disease. *Vagbhata*, it has been clearly stated that the person with *Vata Prakriti* is more susceptible to have *Alpakesha, Rukshatve* and *Chala Manasa* (A. S. Sha. 8/9). Constitutionally the individuals of *Pitta Prakriti* normally have the premature Graying of the Hair and they are always having Hair loss (Ca.V.8/97, Su.Sha.4/68). Thus, the persons with *Vata* and *Pitta Prakritis* are more prone to have the diseases of Hair. (Table no. 5)

Type of water for head bath: 90% patients were using cold water for head bath, 10% patients were using hot water for head bath, all 30 patients (100%) were using hard water for head bath, and none of them were using soft water for head bath. This gives the conclusion that persons using hard water for head bath are more prone to get *Palitya*. (Table No.6)

Application of Hair shampoo, conditioner: 62.5% patients having using Hair shampoo 2 time/week, 20% patients having using Hair shampoo 3 time/week and 12.5% patients were daily uses in shampoo, and 5% patient not using Hair shampoo. 70% patients having using Hair conditioner and 30% patients were not using Hair conditioner. In the present scenario, the cosmetic industry indicated that all brands of shampoos, and conditioners are forgetting the health of the Hair in the rush of business. Shampoo is designed to clean the scalp and remove excess oil. Year after year, Hair care companies continue to put chemicals and toxic

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ingredients in their products like parabens and formaldehyde might ring a bell. (Table no.7,8)

Application of Hair oil: In the present study it was found that 62.5% patients were using Hair oil 2 Time/week, 15% patients having using Hair oil daily, 12.5% patient having using Hair oil 3 time/week and 10% patients were not using Hair oil. (Table No.9). Benefits of applying oil on the head *(Siroabhyanga)* *(Nitya)* always becomes strong rooted, black and long, all senses of that person become healthy and proper nourishment of the Hairs, never falling off Hair and getting a good sleep. It is anointing the head with medicated oil, massaging the scalp mildly and then after taking a bath. Most of the patients were not applying oil in the scalp and Hair ultimately leads to *Khalitya* and *Palitya*.[9,10]

Emotional makeup: In the present study showed that 20% patient had normal nature, 75% patients had TAD, *Chinta, Bhaya, Krodha* nature, 5% patients had Jolly nature. Increases stress leads to the release of a chemical called norepinefhrine into the follicle. This chemical affects the melanocyte stem cells causing them to rapidly turn into pigment cell and move out of the Hair follicles leading to gray Hair. (Table No.10)

Clinical symptoms: As per the present study majority of the patients i.e., 90% *Krishna* Hair,7.5% Ash coloured Hair, 72.5% dryness visible, 95% no burning sensation in scalp, only 5% patient heaving burning sensation. (Table No. 11,12,13)

GSS (Greying severity score): 85% patients were found in between 1-20 scoring, 10% were found in between 40-59 scoring and only 5% patients were found 20-39 scoring on GSS. (Table No. 14)

Effect of therapy on subjective parameter i.e., General Signs and symptoms

Regarding the effect of therapy on clinical symptoms, in group A on intra group comparison significant reduction was found in all symptoms like colour of Hair, dry splitted Hair, burning sensation on scalp except unctuous Hair while in group B significant reduction was not found.

On inter group comparison of group A and group B effect of treatment on colour of Hair, unctuous Hair,

burning sensation on scalp except dry splitted Hair showed statistically insignificant differences. Comparing mean difference of these symptoms it is clear that Group A is better than group B. (Table no. 15)

Effect of therapy on objective parameters i.e., GSS score and Serum Ferritin

Considering the effect of therapy on objective parameter in group A, on intra group comparison significant reduction was found in all objective parameters like GSS score and serum ferritin while in group B significant reduction was not found.

On inter group comparison of Group A and Group B effect of treatment on GSS and Serum ferritin both the groups showed unequal result with statistically significant differences. On the basis of mean difference of above said objective parameters we can say that Group A is better than Group B. (Table no.16,17)

Overall effect of therapy

The overall effect, in Group A, 1 (5**%)** patient showed moderate improvement while 2 (10%) shows mild improvement, 17 (85%) patients showed unchanged result, whereas none (0%) of patients showed marked improvement.

In Group B, 1 (5%) patient showed mild improvement, 19 (90%) patients showed unchanged result and none (0%) of patients showed moderate improvement, marked improvement. (Table no.18)

Table 1: Age wise distribution of Patients

Age (in year) No.	No. of Patients.	Percentage (%)
15-18	1	2.5
19-22	14	35
23-26	25	62.5
Total	**40**	**100**

Table 2: Sex wise distribution of patient

Sex	No. of Patients	Percentage (%)
Male	14	35

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Female	26	65
Total	**40**	**100**

Table 3: Education wise distribution of patients.

Education	No. of Patients	Percentage (%)
Uneducated	0	0
Primary	1	2.5
Middle	2	5
Higher Sec.	1	2.5
Graduate	21	52.5
Post Graduate	15	37.5
Total	**40**	**100**

Table 4: Occupation wise distribution

Occupation	No. of Patients	Percentage (%)
Professional	00	00
Agriculture	1	2.5
Service	00	00
Student	38	95
Unemployed	1	2.5
Total	**40**	**100**

Table 5: *Prakriti* wise distribution of Patients

Prakriti	No. of Patients	Percentage (%)
VP	22	55
VK	10	25
PK	8	20
VPK	0	0
Total	**40**	**100**

Table 6: Distribution of patients by Type of water for head bath

Type of Water	No. of Patient	Percentage %
Hard Water	36	90
Normal Water	4	10
Total	**40**	**100**

Table 7: Application of hair shampoo wise distribution

Application of shampoo	No. of Patient	Percentage %
Daily	5	12.5
1 time/week	0	0
2 time/week	25	62.5
3 time/week	8	20
No	2	5
Total	**40**	**100**

Table 8: Application of hair conditioner wise distribution

Application of conditioner	No. of Patient	Percentage %
Yes	12	30
No	28	70
Total	**40**	**100**

Table 9: Application of hair oil wise distribution

Application of oil	No. of Patient	Percentage %
Daily	6	15
1 time/week	0	0
2 time/week	25	62.5
3 time/week	5	12.5
No	4	10

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Total	**40**	**100**

Table 10: Emotional makeup wise distribution of Patient

Emotional Makeup	No. of Patients	Percentage (%)
Normal	8	20
Jolly	2	5
TAD / (*Bhaya, Chinta, Shoka, Krodha*)	30	75
Total	**40**	**100**

Table 11: Distribution of patients based on colour of hair (*Keshavarna*)

Colour of hair	No. of Patients	Percentage (%)
Krishna Varna	36	90
Ash colored	3	7.5
Yellowish	1	2.5
Total	**40**	**100**

Table 12: Distribution of patients based on *Sphutita Kesha Lakshana*

Sphutita Kesha Lakshana	No. of Patients	Percentage (%)
Dryness visible	29	72.5
Dryness felt by touch	2	5
Normal	9	22.5
Total	**40**	**100**

Table 13: Distribution of patients based on *Snigdha Sthool Lakshana*

Snigdhasthool Kesh	No. of Patients	Percentage (%)
Normal	30	75

Unctuous visible	9	22.5
Unctuous felt by touch	1	2.5
Unctuous Felt with splitted hairs	0	0
Total	**40**	**100**

Table 14: GSS (Greying severity score) scoring wise distribution

Grade	No. of Patients	Percentage (%)
Grade 1 (< 20)	34	85
Grade 2 (20-40)	2	5
Grade 3 (40-60)	4	10
Grade 4 (60-80)	0	0
Grade 5 (> 80)	0	0
Total	**40**	**100**

Table 15: Effect of treatment on Subjective parameters (Clinical Symptoms)

Symptoms	Group	Mean BT	Mean AT	MD	% Relief	SD	SE	Wilcoxon matched-pairs Signed & P value
Colour of hair	A (n=20)	2.300	1.900	0.400	82.60	0.4702	0.1051	W=36.000 N=8p P=0.0078 **VS****
	B (n=20)	2.150	2.000	0.1500	93.02	0.4894	0.1094	W=6.000 N=3p P=0.2500 NS***
Mann- Witney U Statistic=2.000 $p_=$ >0.9999 NS***								
Dry splitted hair	A (n=20)	2.050	2.550	0.50000	80.39	0.6048	0.1352	W=85.000 N=16p P=0.025 S***

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B (n=20)	1.650	1.550	0.1000	93.93	0.4894	0.1094	W=13.000 N=12p P=0.6221 NS***

Mann- Witney U Statistic =130.00 p₌>0.0250 S****

Unctous thick hair	**A** (n=20)	1.150	1.200	0.0500	95.83	0.3663	0.08192	W=1.000 N=1p P=>0.9999 **NS******
	B (n=20)	1.300	1.1500	0.1500	88	0.4702	0.1051	W=6.000 N=3p P=0.2500 NS***

Mann- Witney U Statistic=1.150 p ₌ >0.0999 NS***

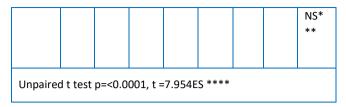| Burning on scalp	**A** (n=20)	1.200	1.050	-0.1000	87.5	0.4104	0.09177	W=6.000 N=3p P=0.2500 ES***
	B (n=20)	1.150	1.050	0.0050000	91.5	0.3078	0.06888	W=1.000 N=1p P=>0.999 NS***

Mann- Witney U Statistic =0.100 p ₌<0.05 NS****

Note: p <0.0001 ES****, p = 0.0001 to 0.001 ES***, p = 0.001 to 0.01 VS**, P= 0.01 to 0.05 S*, p >0.05 NS

Table 16: Effect of treatment on GSS Score

Parameters	Group	Mean		MD	SD	SE	Paired t test	P value
		BT	AT					
GSS score	**A** (n=20)	19.813	17.046	2.767	14.219	3.179	8.140	<0.0001 ES***
	B (n=20)	12.282	12.266	0.0155	8.697	1.945	1.520	-0.01550

						NS***

Unpaired t test p=<0.0001, t =7.954ES ****

Note: p <0.0001 ES****, p = 0.0001 to 0.001 ES***, p = 0.001 to 0.01 VS**, P= 0.01 to 0.05 S*, p >0.05 NS

Table 17: Effect of treatment on Serum ferritin Score

Parameters	Group	Mean		MD	SD	SE	Paired t test	P value
		BT	AT					
Serum Ferritine	**A** (n=20)	105.72	137.53	31.420	27.574	6.166	2.500	0.0218 S**
	B (n=20)	115.34	134.02	18.680	39.945	8.932	1.328	0.2000 NS**

Unpaired t test 4.616, p =<0.0001 ES ****

Table 18: Overall effect of Therapy

Effects	Group A		Group B	
	No. of pts.	%	No. of pts.	%
Control (100%)	0	0	0	0
Marked Improvement (75% to < 100% relief)	0	0	0	0
Moderate Improvement (50% to < 75% relief)	1	5	0	0
Mild Improvement (25% to < 50% relief)	2	10	1	5
Unchanged (0 to <25% relief)	17	85	19	95
Total	20	100	20	100

DISCUSSION

Graying of Hair or Canities is a physiological phenomenon, essentially a part of chronological ageing. The term "Premature Graying of Hair" is used when Graying begins before the usual age of onset.[11] In Ayurvedic classics elaborated description was not found about *Akala Palitya*. *Acharyas* had explained this disease under different headings as *Kshudrarogadhikara* and *Kapala Roga*. *Acharya Charak* and *Acharya Sushrut* have quoted Premature Graying of Hair as *Akaala Palitya* and mentioned it as *Ras Dhatu Pradosaja Vikara*.[12,13] *Palitya* occurs at the stage of *Vardhakya*, but due to increased *Ushma Guna* of *Pitta, Palitya* symptoms are observed at early i.e., during young age. The *Sharir Ushma* (heat) and *Pitta* of the body recourse to the region of the head which due to overwork and excessive grief or anger, tend to make the Hair grey, and such silvering of the Hair is called *Palitya*.[14] *Charaka* quoted excess *Lavana Rasa Sevana* during pregnancy is the causative factor for the *Akaal-Palitaya.* Although for the disease of *Palitya*, no specific *Nidana* are mentioned, but still on basis of *Samprapti, Pitta Prakopaka Nidana, Rasadushti* and *Asthidusti* pathology can be understood. Certain *Nidanas* of *Kshudra Roga* as well as *Shirorogas* can be also taken for better understanding of disease *Palitya*.

Probable mode of action of therapy

- *Acharya Charak* has described that *Nasa* is the only gate way to *Shirah* so the medicine administered through *Nasa* can easily spread to *Shirah* and get absorbed. According to Ayurvedic point of view assimilation and transportation of *Nasya* drug take place through *Shringataka Marma* and reaches to local as well as general circulation.

- Intra nasal delivery of drug bypasses the blood brain barrier to target CNS, reducing systemic exposure of drug. It also bypasses the hepatic first pass metabolism and drug can directly enter into systemic circulation.

- *Akaal Palitya* is one among the *Kapalgat Roga* and caused by vitiation of mainly *Pitta* and *Vata Doshas.* Increased *Vata Doshas* leads to symptoms like *Ruksha* and *Sphutitha* Hair and vitiated *Pitta* leads to *Daha* and Graying of Hair.

- In present study *Vibhitaka Majja Taila* is used for *Pratimarsha Nasya*. Oil has *Snigdha, Ushna* and *Sukshma* properties which clears the *Srotas* and subside the *Doshas* specially *Vata. Madhura, Amla Rasa* and *Madhura Vipaka* of *Vibhitaka* pacifies the *Vata* and *Pitta Dosha* and thus relieves the symptoms.

- *Pratimarsha Nasya*, being the S*nehana* and *Brihan Nasya* it gives strength and nourishment to all the *Dhatus* and further stop the degeneration of Hair.

- The action of *Nasya Karma* depends on the drug used. *Vibhitaka* fruits contains coloring agents like tannin, gallic acid, ellagic acid ethyle gallate and galloyl glucose which are responsible for the blackening of Hairs.

- Oxidative stress leads to the loss of pigment producing stem cell, and releases the chemical norepinephrine into the follicle. Norepinephrine affects the melanocyte stem cell and produce gray / white Hair. Polyphenols compound specially galic acid and ellagic acid present in *Vibhitaki* scavenges the free radical and reduces the oxidative stress. Thus, helpful in Premature Graying of Hair.

CONCLUSION

Akaal Palitya is a *Rasapradoshaja Vyadhi* occurs mainly due to vitiation of *Pitta* and *Vata Dosha* with involvement of *Asthi Dhatu*. Faulty Hair care methods, dislike for oleation, excessive use of harmful hair care products (shampoo and conditioner) as well as tension, anxiety, depression along with wrong dietetic habits, are the main aetiological factors of *Akaal Palitya*. *Pratimarsha Nasya* of *Vibhitaka Majja Taila* had shown significant improvement in subjective parameter like colour of hair, dry splitted hair, burning on scalp as well as on objective parameter like GSS score and Serum Ferritine Level. Study group kept on *Vibhitaka Majja Taila* shown better effect than Placebo group with respect to subjective and objective parameters in *Akaala Palitya*. It is observed that these selected interventions don't have any side effect thus, *Vibhitaka*

Majja Taila Nasya was recommended for management of *Akaal Palitya* (Premature graying of hair). *Pratimarsha Nasya* of *Vibhitaka Majja Taila*, being the *Snehana* and *Brihan Nasya* it gives strength and nourishment to all the *Dhatus* and if administered regularly will surely prevent the *Akaal Palitya.*

REFERENCES

1. Trüeb RM. Pharmacological interventions in aging hair. Clin Interv Aging. 2006; (Last cited 15 May 2020): available from 1:121–9. [PMC free article] [PubMed] [Google Scholar].

2. Tobin DJ Paus R. Graying : Gerontobiology of the hair follicles pigmentary unit. Exp Gerontol 2001; (Last cited 16 May 2020): available from 36:29-54.

3. Finaly A.Y., Khan GK. Dermetology Life Quality Index (DLQI)- A simple practical measure for routine clinical use. Clin Exp Dermatol 1994; (Last cited 16 May 2020) : available from19; 210-6.

4. Ralph M. Trueb, Pharmacologic interventions in aging hair; June 1 (2); 121-129 published on line 2006 June; (Last cited 16 May 2020).

5. Sharti Kashinath, Charak Samhita of Agnivesh, Sutra Sthana Ch.28, vers 10 Part 1. Varanasi: Chaukhambha Sanskrit Sansthan; 6th Edition 2011 pg 571.

6. Ambika Datt Shastri. Sushrut Samhita. Sutra Sthana Ch.24, vers 10 Part 1. Varanasi: Chaukhambha Sanskrit Sansthan; 11th Edition 1997. Pg 132.

7. Sharangdhar Samhita. Uttarkhand Ch.8 vers 46 Varanasi: Chaukhambha Prakashan, Edision 2017 pg.407.

8. LJ Wadhani. An evaluation of Bhringraja Tail Nasya with and without Bhringrajadi Rasayan in the management of Akaala Palitya. RGUSH 2010. (Last cited 22 May 2020); View at – 52.172.27.147.

9. Shastri Pt. Kashinath, Charak Smahita of Agnivesha, elaborated by Charaka and Dridhabala, Varanasi: Vol.I Sutrasthana Ch 5, Chaukhambha Sanskrit Sansthan, 1st edition; Reprint 2009, verse 81.

10. Murthy Srikantha, K.R, Ashtanga Hridaya, Varanasi, Chowkhamba Krishnadas Academy, Uttatantra 2004; Page no. 728.

11. Bhat RM, Sharma R, Pinto AC, Dandekeri S, Martis J. Epidemiological and investigative study of premature greying of hair in higher secondary and preuniversity school children. Int J Trichology. 2013; (Last cited 27 May 2020); Available from 5:17–21. [PMC free article] [PubMed] [Google Scholar].

12. Manjiri S. Deshpande, MD. Junaid et al. Study of Indravaruni Beej Tail Shiroabhyang in the management of Palitya. IJSR. May 2016 (Last cited 26 May 2020); Available from 2277-8179.

13. A. Singal Graying severity score: "A useful tool for evaluation of Premature Canities." 2016 (Last cited 27 May 2020); Available from (http://www.idoj.in), IP: 106.79.237.110

14. Ashwini vitthalrao et al. A clinical study to evaluate the efficacy of Kayyonydi Tail Shiroabhyang in the management of Akaala Palitya AIIRJ (Last cited 20 May 2020); Available from 5.707/ 2349- 638 x 26.

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