(IJRMST) 2019, Vol. No. 8, Jul-Dec **e-ISSN: 2455-5134, p-ISSN: 2455-9059**

EFFECT OF MUKHAKANTIKARA VARNAK GHRITA IN VYANGA (MELASMA)

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ABSTRACT

Background: *Vyanga is one of the chronic skin disorders described in Ayurveda under the kshudra roga prakarana. Acharya Sushruta has explained it as painless thin brown patches over face which can be correlated with Melasma of modern medical science. Melasma is the common acquired hypermelanosis that occurs exclusively on the sun-exposed skin of face. It is often difficult to treat due to recalcitrant and recurrent nature. According to Ayurveda, the pathogenesis of vyanga, involves Pitta dosha, bhrajaka pitta in particular, thus drugs that pacifies Pitta dosha, with Varnaprasadak, Kusthaghna, and Raktashodhaka property proves to be effective in Vyanga management.*

Aims and objectives: *To clinically evaluate the efficacy of Mukhakantikara Varnak Ghrita in the management of Vyanga.*

Material and methods: *In this study, the trial drug used was Mukhakantikara Varnak Ghrita for local application on affected areas. 15 patients coming under inclusion criteria approaching the OPD of skin care unit and Derma Research Lab. under the P.G. Dept. of Samhita and Siddhanta of Rajiv Gandhi Government Post Graduate Ayurveda College and hospital, Paprola (H.P.) were selected. The total duration of trial was 45 days with 3 follow ups at an interval of 15 days*

.

Conclusion: *The clinical study showed that Mukhakantikara varnak Ghrita has significant effect in Vyanga management. Clinical improvement was more evident in Varna (colour of lesion) i.e. Darkness parameter when compared to other parameters.*

KEYWORDS: *Vyanga, Melasma, Varna, Varnaprasadan, Mukhakantikara varnak Ghrita*

INTRODUCTION

Skin plays an important role in building beauty and personality of a person. Diseases of the skin account for a great deal of misery, suffering, incapacity and economic loss. Any skin disorders that negatively alter appearance have the potential to affect an individual's career as well as personal and social interactions. It

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may be agitated with loss of privilege and opportunities. The popular adage, skin patients are never cured and never die remains true for disfiguring condition like melasma as it is often difficult to treat due to recalcitrant and recurrent nature. Melasma is an acquired hypermelanosis that most commonly affects females of childbearing age, although males may also be affected[1]. The hypermelanosis affects the upper lip, cheeks, forehead and chin and becomes more apparent following sun exposure. The pathogenesis of melasma is not fully understood; however, hormonal factors, in particular pregnancy and use of oral contraceptives, are the most common precipitants. Exposure to ultraviolet radiation both precipitates and exacerbates. Other etiological factors include phototoxic medication, genetic predisposition, and thyroid disease[2].

In Ayurveda this condition is referred as *Vyanga.* It is the disorder which is primarily seen on the face (mukhamagatyam) according to brihat-trayi and laghu-trayi and is characterized by the presence of *Niruja* (painless), *Tanu* (thin) and *Shyava Varna Mandalas*[3] (bluish-black patches). It occurs due to vitiation of *vata, pitta* followed by *rakta dosha*. *Manasika nidanas* (psychological factors) i.e. *Krodha*[4] (anger), *Shoka*[5] (sorrow), and *Ayasa* (exertion) are considered to be major cause in *Samprapti* (pathogenesis) of *Vyanga. Chardi vega dharana*[6] is also taken as the cause for *Vyanga.*

Remarkable progress has been made in therapeutics even then the treatment of melasma remains unsatisfactory. This chronic disorder is very difficult to treat because of its recalcitrant and recurrent nature thus is very frustrating and challenging to both patients and physicians. According to Ayurveda, drug or diet article that reverses or breakdown the *Samprapti* is ideal. Present study was planned to make an attempt to find some potent and perfect remedy for the disease *Vyanga* which could be useful to regain the original beauty of face. The drugs having *Varnya* property, *Vata Pitta Dosha Shamaka* containing depigmenting agent and having properties like emollient, astringent, demulcent action etc. which enhance the beauty of the skin were taken into consideration. Drug expected to have action on *Bhrajaka Pitta*- the major one for production of normal and abnormal colors to the skin *and that* enables the *Paka* (transformation or conversion) of the substance used for *Abhyanga*, *Parishek*, *Avagaha*, *Lepana*[7] etc. was to be selected. Thus topical drug was taken into consideration. *Mukhakantikara Varnak Ghrita*[8] mentioned by *Chakradutta* as *Varnaprasadhaka* was selected for study as there were no previous studies done. *Ghrita* itself is *Varnaprasadaka*[9] and the other ingredients have *Varnaprasadak, Kusthaghna, and Raktashodhaka* property.

MATERIALS AND METHOD

Patients fulfilling the diagnostic criteria of *Vyanga* were randomly selected with respect to age, irrespective of sex, cast, religion and socio-economic status from out-patient department of skin care unit and Derma Research Lab., P.G. Dept. of Samhita and Siddhanta of Rajiv Gandhi Government Post Graduate Ayurveda College and hospital, Paprola (H.P.).

Protocol of Research

Approval of synopsis for human trial was inferred from Institutional Ethical Committee of R.G.G.P.G. Ayurvedic College and hospital, Paprola, H.P. (letter no. Ayu/IEC/2017/1152). Written and informed consent from each patient willing to participate was obtained before starting the course of treatment. Proforma containing profile of individual with complaints, history, signs and symptoms and successive assessment was prepared and duly filled. The study design was a single group clinical-intervention study of 45 days with a pre, post and follow-up assessment at interval of 15 days.

Diagnostic criteria

Subjective criteria:

The patients were diagnosed on the basis of clinical signs and symptoms of the disease *Vyanga* as per Ayurvedic i.e. *Mandala* (circular lesions or macular lesions with well-defined scalloped margins), *Shyava* (brown colored *pigmentation), Niruja* (no pain in the lesion), *Tanu* (superficial pigmentary lesion).

Objective criteria:

Assessment was made by-

- Examination by woods lamp.

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- Derma scanning of face.

Inclusion Criteria

Patients with clinical signs of the disease *Vyanga* as per ayurvedic classics between age group of 15-60 years irrespective of sex, religion, occupation, and chronicity and also willing to participate in trial were selected for the study.

Exclusion criteria

Patient with other systemic or metabolic disorders like dyslipidemia, thyroid dysfunction, renal failures and hepatic disorders with hyperpigmentation since birth like neavus of ota or that caused by tumor like malignant melanoma and not willing to participate were excluded.

Investigation/ laboratory parameters:

Following investigations were performed before and after completion of trial.

- Hematological tests: CBC, ESR, Hb%, LFT, RFT, Lipid profile

SELECTION OF DRUG

Many research works had been carried out for the management of disease *Vyanga* at different places. Different *Lepa Kalpana* were selected as trial drug e.g. *Manjistha lepa*, *Jatiphala lepa*, *Arjun twak lepa*, *Varnya Gana lepa* etc. It was found that the preparation and application of *lepa* was difficult, time consuming and was mess for patients. Keeping this in view, *Mukhakantikara Varnak Ghrita* was selected for local application in present study. As the drug is prepared by *Ghrita* and *Siktha* and it is in ointment form, it is easy for application.

The ingredient of *Mukhakantikara Varnak Ghrita* are depicted at table-1

Name of Drug	Latin name	Family name	Parts used	Quantity
Madhuka	*Glycyrrhiza glabra* Linn.	Leguminosae	Root	100gm
Rakta chandan	*Pterocarpus santalinus* Linn.	Leguminosae	Heart wood	100gm
Kanguni	*Celastrus panniculatus* willd.	Celastraceae	Seed	100gm
Sarshap	*Brassica campestris* Linn.	Cruciferae	Seed	100gm
Padhmak	*Prunus cerasoides* D. Don.	Rosaceae	Stem bark	100gm
Haridra	*Curcuma longa* Linn.	Zingiberacae	Rhizome	100gm
Lodhra	*Symplocos recemosa* Roxb.	Symplocaceae	Stem bark	100gm
Keshar	*Crocus sativus* Linn.	Iridaceae	Stigma	100gm
Ghrita	Ghee			2.5 kg
Siktha	Wax			800gm

Table 1 Ingredients of Mukhakantikara Varnak Ghrita

Ayurvedic properties[10]

Name of Drug	Rasa	Guna	Veerya	Vipaka	Doshghnta
Madhuka	*Madhur*	*Guru, Snigdha*	*Sita*	*Madhur*	*Vata pitta shamak*
Rakta chandan	*Tikta, Madhur*	*Guru, Ruksha*	*Sita*	*Katu*	*Kapha pitta shamak*
Kanguni	*Katu, Tikta*	*Tikshna*	*Ushna*	*Katu*	*Vata kapha shamak*
Sarshap	*Katu, Tikta*	*Tiksha, Snigdha*	*Ushna*	*Katu*	*Kapha vata nashak*
Padhmak	*Kashaya, Tikta*	*Laghu*	*Sita*	*Katu*	*Kapha pitta shamak*
Haridra	*Tikta, katu*	*Ruksha, Laghu*	*Ushna*	*Katu*	*Kapha vata shamak pitta rechaka*

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Lodhra	*Kashaya*	*Laghu, Ruksha*	*Sita*	*Katu*	*Kapha pitta shamak*
Keshar	*Katu, Tikta*	*Snigdha*	*Ushna*	*Katu*	*Tridosha har*
Ghrita	*Madhur*	*Somya, mridhu*	*Sita*	*Madhur*	*Vata pitta nashak*
Siktha					

Table 2 Ingredients with their properties

METHOD OF DRUG PREPARATION

Almost all the raw drugs (ingredients) were purchased from Herbal Garden, Jogindernagar and Baijnath pharmacy, paprola. Thus purchased raw drugs were identified by expert team of deptt. of Ras-sastra and deptt. of Dravya guna of RGGPG Ayu. College, Paprola. The drug was prepared as per standards of GMP in the *Charaka* Pharmacy, Ayurvedic College Paprola. Chemical analysis of trial formulation was done at DTL Jogindernagar (H.P.).
All the *Kalka Dravyas* were made into powder form. *Kalka* was prepared by adding water and kept overnight. *Go-ghrita* was taken in a steel vessel and heated over *Mandagni* till complete evaporation of moisture content. The *Kalka* was added to *Ghrita*, with intermediate stirring. Heating duration was adjusted so as to complete the *Snehapaka* by 2 nights. Heating process was carried out till *Sneha Siddhi Lakshana* appeared then vessel was taken out from the fire and ghee was filtered through clean cloth in its hot stage. *Siktha* (wax) was melted in other vessel and impurities were filtered out using clean cloth. Wax was then added to the ghee along with *Prakshep Dravya*. After mixing it properly and cooling, *Ghrita* was stored in air tight container and labeling was done.

Pictures of Prepared Drug

Figure 1 Mukhakantikara Varnak Ghrita

Figure 2 Packed Drug

CLINICAL STUDY

The clinical study was done to evaluate the effect of *Mukhakantikara Varnak Ghrita* (externally) in patients of *Vyanga.* Out of 15 registered patients 14 completed the study.

Administration of drug:

Clinically diagnosed 15 patients of *vyanga* were given *Mukhakantikara Varnak Ghrita* for external application (as per lesion size) once a day for 45 days. Patients were advised to wash their face with lukewarm water before application of *Ghrita.*

Assessment Criteria:

The effect of therapy was assessed on the basis of following subjective and objective criteria.

Sr.No		Scoring	Before Trial	After Trial
1.	***Varna* (color of the lesion)**			
	Normal skin color	**0**		
	Light brown	**1**		
	Dark brown	**2**		
	Black	**3**		
2.	***Sthan* (distribution of lesion)**			
	No lesion	**0**		
	Only cheeks	**1**		
	Cheeks, nose and forehead	**2**		
	Cheeks, nose, forehead, malar, mandibular part of face & upper neck	**3**		
3.	***Akar* (size of lesion)**			
	No lesion (0)	**0**		
	Small (1-2 cm)	**1**		
	Medium (2-3 cm)	**2**		
	Large (>3 cm)	**3**		

Table 3 Assessment criteria

Mass Area Severity index:

Mass area severity index[11] (MASI) is developed by Kimbrough-Green et al for the assessment of melasma. The severity of the melasma in each of the four regions (forehead, chin, left and right malar region) is assessed based on three variables:

- Percentage of the total area involved(A)
- Darkness (D)
- Homogeneity(H)

AREA	DARKNESS	HOMOGENEITY
0 = no involvement	0 = normal skin color without evidence of hyperpigmentation	0 = normal skin color without evidence of hyperpigmentation
1 = <10%	1 = barely visible Hyperpigmentation	1 = specks of involvement
2 = 10-29%	2 = mild hyperpigmentation	2 = small patchy areas of <1.5 cm
3 = 30-49%	3 = moderate hyperpigmentation	3 = patches of involvement >2 cm diameter
4 = 50-69%	4 = severe	4 = uniform skin involvement without any clear areas
5 = 70-89%		
6 = 90-100%		

Table 4 MASI score Grading Parameters

To calculate the MASI score, the sum of the severity grade for darkness (D) and homogeneity (H) is multiplied by the numerical value of the areas (A) involved and by the percentages of the four facial areas (10-30%). The following formula is used for calculation of MASI score

MASI total Score = 0.3A (f)[D(f)+H(f)]+ 0.3A (lm) [D(lm)+H(lm)] + 0.3A(rm) [D(rm)+H(rm)] + 0.1A (c) [D(c)+H(c)]

Assessment at Completion of Trial

Patients were assessed before and after treatment for improvement in symptoms on the basis of above said scoring pattern and percentage improvement were calculated.

Complete remission	100% relief in sign and symptoms
Excellent improvement	More than 75% relief in the sign and symptoms
Moderate improvement	50% to 75% relief in the sign and symptoms
Mild improvement	25% to 49% relief in the sign and symptoms
Unimproved	less than 25% relief in the sign and symptoms

Table 5 overall assessment

Statistical analysis

The result obtained from the study were subjected to statistical analysis in term of mean, standard deviation(SD) and standard error (SE), t value, P value and f values in paired 't' test

Observation:

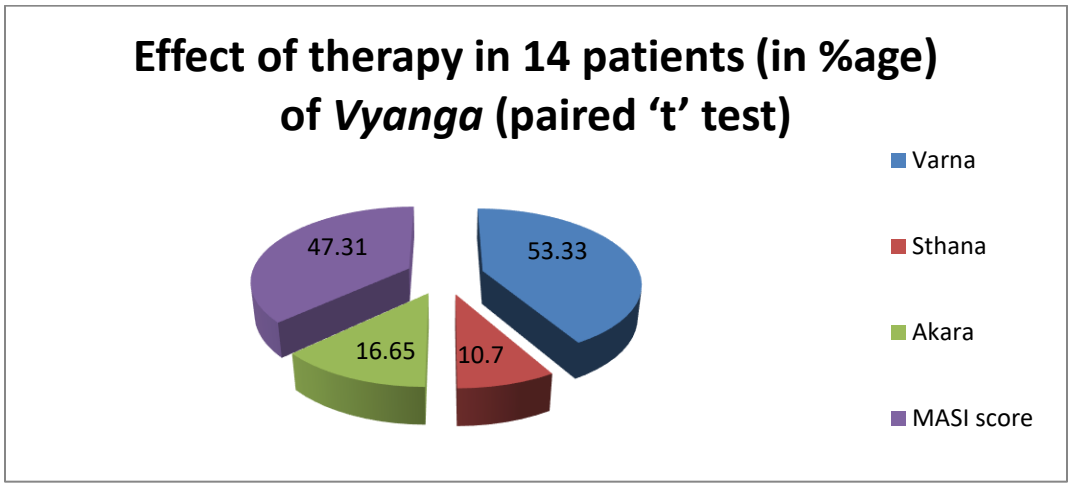
A total of 15 patients diagnosed with *Vyanga* (as per the inclusion criteria) were included and received the intervention. However, no follow-up was received from one patient without any reason and hence, the current study was analyzed on 14 patients. In this study, maximum numbers of patients i.e. 85.71% were in the age group of 21-30 years. Majority of patients were female. Most of the patients i.e. 57.14% were of *vata-pittaj prakriti* followed by 35.71% of *pitta-kaphaja*. Color of lesion was dark brown in 50% of the cases. Disease was chronic in 78.57%, with gradual onset in 71.42% patients. Aggravating factors was sunlight in 64.28% cases followed by menstrual cycle in 21.42%.

EFFECT OF THERAPY

Effect of therapy in 14 patients of *Vyanga* (paired't' test)

Sr. No.	**Symptoms**	**Mean**		**% relief**	**SD±**	**SE±**	**'t'**	**P**
		BT	**AT**					
1.	*Varna*	2.143	1.000	53.33	0.535	0.143	8.00	<0.001
2.	*Sthana*	2.000	1.786	10.70	0.579	0.155	1.385	0.189
3.	*Akara*	2.143	1.786	16.65	0.497	0.133	2.687	0.019
4.	MASI score	7.200	3.793	47.31	2.099	0.561	6.073	<0.001

Table 6 Effect of Mukhakantikara Varnak Ghrita



1. ***Varna*:** The difference of mean before and after trial of *Varna* is 1.143. There was 53.33% relief in color of lesion which was statistically highly significant (p=<0.001).
2. ***Sthana*:** The difference of mean before and after trial of *Sthana* is 0.214. There was 10.70% relief in distribution of lesion which was statistically insignificant (p=0.189).
3. ***Akara*:** The difference of mean before and after trial of *Akara* is 0.357. There was 16.65% relief in distribution of lesion which was statistically significant (p=0.019).
4. **MASI Score:** The difference of mean before and after trial of MASI score is 3.407. There was 47.31% relief in MASI score which was statistically highly significant (p=<0.001).

Total effect	**No. of patients**	**Percentage relief**
No relief	1	7.14%
Mild improvement	11	78.57%
Moderate improvement	1	7.14%
Marked improvement	0	0
Cured	1	7.14%

Table 7 Total effect of therapy

Patients picture before and after trial

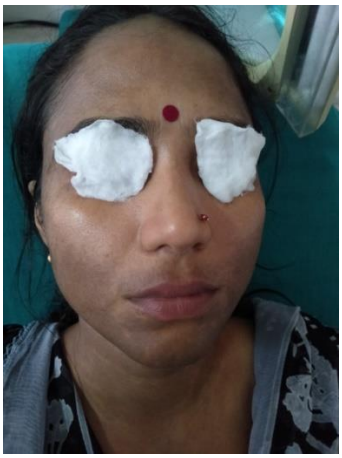


Figure 3 Patient 1 (Before trial)

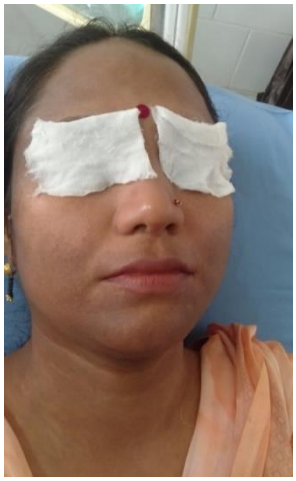


Figure 4 Patient 1 (After trial)

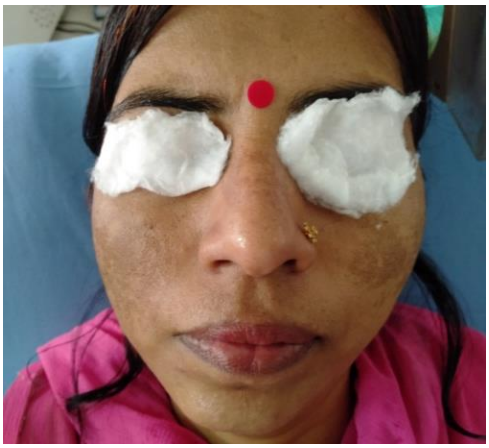


Figure 5 Patient 2 (Before trial)

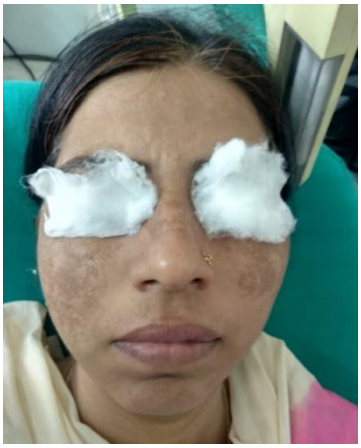


Figure 6 Patient 2(After trial)

DISCUSSION

Out of 15 registered patients, 1 dropped out and 14 patients completed the trial. As per the result, the mean of *Varna* (color of lesion) of 14 patients before treatment was 2.143 and after 45 days of treatment it was 1.00. Before and after treatment mean of *sthana* (distribution of lesion) was 2.00 and 1.786 respectively. Before and after treatment mean of *akara* (size of lesion) was 2.143 and 1.786 respectively. The mean MASI score was 7.200 and 3.793 before and after treatment respectively which was highly significant (p=<0.001). MASI score depends upon 3 factors that is darkness, homogeneity and area of lesion. There was significant improvement in darkness parameter i.e. color of lesion compared to other parameters.

Probable mode of action

Most of the ingredients of the drugs have *Varnya* property. *Manjishta* and *Lodhra* are *rakta prasadaka* and best *kushtaghna dravya*. *Yashtimadu*, *Haridra*, *Kumkum*, *Rakta chandana* provides good complexion to the skin. *Kumkum* is indicated for *Vyanga*

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management[12]. The main chemical constituents were Santalol, Genistein, glabridin, Liquertin, Glycyrrhizin etc. Santalol is the main chemical constituent of *Candana* which is found to be effective in controlling the oxidative stress caused by ultraviolet radiation. Genistein is an important chemical constituent of *Padmaka* which has been shown to substantially block the sub-acute and chronic UVB-induced cutaneous damage. Genistein is already included in various products such as facial moisturizers, sunscreens, and several skin care formulations claiming antiaging effects. Glabridin and Liquertin are said to have tyrosinase inhibitory and anti-inflammatory properties which are major constituents of *Madhuka.* Also majority of drugs possess *Madura, Tikta* and *Kashaya Rasa* which pacifies the vitiated *Pitta Dosha[13]*. Most of them possess *Snigdha, Laghu, Ruksha Gunas*. *Snigdha Guna* is responsible for *Mardava* and *Varna prasadhana[14]* whereas *Laghu, ruksha* are the properties of *Agneya Dravya* which in turn are responsible for *Prabha*, *Prakasha* and *Varna[15]*. After the application of *Ghrita Abhayanga* is done that is *Varnaprasadhak[16]* itself. *Ghrita* then comes in contact with *Roma* and *Romakupa*. *Paka* of active principle of drug takes place by action of *Bhrajaka Agni* and *Rasadhatuagni*. The *Ushna Guna* of *Bhrajaka Pitta* metabolizes externally applied drug. Thus the *Dosha* is pacified and pathogenesis is break down by active principle of drug.

CONCLUSION

From the observations and results of this study, it can be concluded that *Mukhakantikara Varnak Ghrita* has significant effect in *Vyanga.* Clinical improvement was more evident in *Varna* (colour of lesion) i.e. Darkness parameter when compared to other parameters. The study should be done on a larger sample size and an extended intervention period for better accuracy in results and to reach at the proper conclusion.

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