

## A RANDOMIZED CLINICAL STUDY TO EVALUATE THE EFFECT OF BRAHATYADI YAPANA BASTI AND BRAHATYADI YAPANA BASTI WITH ABHYANGA IN KAMPA VATA W.S.R TO PARKINSON'S DISEASE

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### ABSTRACT

The second most prevalent neurodegenerative ailment after Alzheimer's is Parkinson's disease. The condition affects about two out of every 1000 people, and it most frequently strikes persons after the age of 50. It affects more in male than female. Numerous research projects examine possible therapies for treating some of Parkinson's disease's symptoms. Understanding Parkinson's disease in terms of Ayurveda can be done under the Vatavyadhi, to be specific, caused by the Vata Avarana, so possible correlations in Ayurveda for Parkinson's disease are Kaphaavruta vyana, Pranaavruta samana, and Vepathu, even though no single Avarana process completely covers all symptoms of Parkinson's disease. **Objective of the study:** To evaluate the effect of Brahatyadi yapana basti in the management of Kampavaata. To evaluate the effect of Brahatyadi yapana basti along with Abhyanga with Bala Taila in the management of Kampavaata. To compare the effect of Brahatyadi yapana basti and Brahatyadi yapana

basti along with Abhyanga with Bala Taila in Kampavaata. **Methodology:** This is an open clinical study with pre-test and post-test design where in minimum of 30 patients diagnosed as Parkinson's disease of either sex and patients fulfilling the inclusion criteria were

randomly selected from OPD / IPD of S.D.M Ayurveda Hospital Kuthpady, Udupi. **Result:** Brahatyadi yapana basti along with Abhyanga showed good improvement in Kampa, Gatisanga. Brahatyadi yapana basti along with abhyanga showed better improvement after follow up as compared to brahatyadi yapana basti alone in vakvikriti. Brahatyadi yapana basti along with Abhyanga has shown good improvement in objective parameters like picking of pins, buttoning of time, Rapid alternating movement. There is not much changes seen in Matiksheena and stambha, walking time with Brahatyadi yapana basti or Brahatyadi yapana basti and Abhyanga. But Brahatyadi Yapana basti and Abhyanga showed significant improvement after follow up in walking time. **Conclusion:** To conclude *Brahatyadi Yapana Basti* along with *Abhyanga* has showed better improvement in treating *Kampavata*.

**KEYWORDS:** Kampavata, Parkinsons disease, Brahatyadi yapana basti, Abhyanga, Bala taila.

## INTRODUCTION

Panchakarma plays an essential role in Ayurveda, particularly Basti Karma. The Maharshi Charaka statement "Basti Vataharanam Shreshtham" conveys the knowledge that Basti is the most effective way to treat any Vata Vyadhi.<sup>[1]</sup> Basti is an effective palliative treatment for the vitiated doshas. Sushruta asserts that Vataja, Pittaja, Kaphaja, and Raktaja disorders can be treated both independently or in combination. By witnessing its advantages, Acharyas regarded basti karma as Ardha chikitsa, and some of the acharyas even believed that it was a complete cure for all ailments.

Parkinson's disease can be correlated in Ayurveda as "*Kampavata*". *Kampavata* expresses signs and symptoms as *karapadatalekampa*, *dehabhramaduhkhita*, *nidrabhanga*, *matihksheen*.<sup>[2]</sup> Other possible correlations in *Ayurveda* for Parkinson's disease are *Kaphavrutavyana*<sup>[3]</sup>, *Pranavrutasamana*<sup>[4]</sup>, *vepathu*.<sup>[5]</sup> Bradykinesia, rigidity, shuffling gait, postural instability, tremor, and loss of natural movement are all symptoms of idiopathic Parkinson's disease.

Parkinson's disease is currently incurable and has no known cure. There are many treatments available to both postpone the development of motor symptoms and to lessen their severity. All of these treatments aim to enhance the brain's dopamine levels either by supplying dopamine in its place, by simulating dopamine, or by extending the effects of dopamine by preventing its breakdown. According to studies, early treatment during the non-motor period

can postpone the emergence of motor symptoms and hence improve quality of life. Parkinson's disease can be understood in terms of Ayurveda under the specific vatavyadhi induced by the vata Avarana. Therefore, it can be compared to Kaphaavruta vyana<sup>[6]</sup>, Pranaavruta samana<sup>[7]</sup> and Vepathu.<sup>[8]</sup> The course of treatment for the aforementioned centres around Yapana basti/Rasayana chikitsa when Avarana is present in relation to Marma, Asthi, or Sandhi and is either directly or indirectly engaged since it is vatavyadhi. If the patient is currently taking allopathic medication, this treatment plan even shows promise in reducing the negative effects of such medications and managing their dosage.

## MATERIALS AND METHODS

**Patient source:** Patients diagnosed with *Kampavata*/Parkinson's Disease were selected from OPD and IPD of Shri Dharmasthala Manjunatheshwara Ayurveda Hospital, Kuthpady, Udupi.

**Medicine source:** *Kashaya Dravyas, Kalka Dravyas, Madhu, Goghrita, Murchita tilataila, Godugdha* required for *Yapana Basti* were procured from SDM Ayurveda pharmacy, Udupi. *Bala Taila* for *Abhyanga* and *Dhanwanatara Taila* for *Matra Basti* were procured from SDM Ayurveda Pharmacy.

### Diagnostic criteria

Patients presenting with at least two *lakshanas* of *kampavata* such as *karapadatalekampa, dehabhramaduhkhita, nidrabhanga, matihksheena*<sup>[2]</sup> and at least two symptoms of Parkinson's Disease like resting tremor, rigidity(stiffness), bradykinesia(slowing), and gait dysfunction with postural instability.

### Inclusion criteria

- Patients presenting with the diagnostic criteria.
- Patients of age group between 18-70 years.
- Who are fit for *yapana basti* and *Abhyanga*.

### Exclusion criteria

- Pregnant and lactating women
- Secondary Parkinsonism
- Parkinson plus syndrome

## INTERVENTION

All the 30 Patients were divided randomly into Group A and Group B (15 Patients in each group).

### GROUP A.

❖ *Brahatyadi Yapana Basti*

*Makshika*- 100ml

*Saindhava*- 10gm

*Murchitatila taila*- 50ml

*Go-ghrita* - 50ml

*Ksheerapaka* of *Brahati*, *Kanthakari*, *Shatavari*, *Chinnaruha*- 240ml

(40gm *dravya* each+ 240ml *godugdha*+ 480ml water boiled and reduced to 250ml)

*Kalka*- 30gm (*Madhuka*+ *Madana Pippali*)

Total= 480ml

❖ *Matra Basti* with *Dhanwantara Taila*<sup>[9]</sup>- 30ml

➤ Preparation of the medicine: *Basti dravya* is mixed in the order of

### Group B

I. *Yapana basti* and *Matra Basti* was given as mentioned previously.

II. **ABHYANGA**- *Abhyanga* with *Bala Taila* 100ml was done at 11:00 AM

### Subjective Parameters

• Symptoms of *Kampavata*/Parkinson's Disease like

❖ *Karapadatalekampa* (Tremors)

❖ *Dehabhramaduhkhita*

❖ *Nidrabhanga*

❖ *Matihksheena*<sup>[2]</sup>

❖ *Vakvikruti*: (monotony).

❖ *Gatisanga*: (Bradykinesia)

❖ *Rigidity*(stiffness)

The questionnaire was conducted on the basis of The Unified Parkinson's Disease Rating Scale (UPDRS) as per the guidelines of The International Parkinson and Movement Disorder Society.<sup>[10]</sup>

## RESULT

### Results were analysed statistically using Wilcoxon Signed rank test

**BT:** Before the initiation of *Brahatyadi yapana basti* in Group A; *Brahatyadi yapana basti* and *Abhynaga* in Group B.

**AT:** Immediately after the completion of the treatment.

**AF:** After the completion of follow up of 16 days.

#### 1. *Kampa*

**Table No. 1: Showing the mean of *Kampa* within the groups.**

Group	<i>Kampa</i> mean		
	BT	AT	15 <sup>th</sup> Day
Group A	3.0667	2.2000	1.8000
Group B	3.0667	1.7333	1.2667

In the current study, on comparing within the groups, i.e. Group A and B, both groups showed statistically highly significant improvement in *Kampa* after treatment and after follow up. On comparing between the groups, it was found that Group B showed better improvement than group A in *Kampa*. Parkinson's disease occurs in old age, *Vata Prakopa* occurring in this age is mainly due to *Dhatukshaya*. Even though *Brahatyadi Yapana Basti* acts as *Balya* and *Rasayana* but single *Yoga Basti* course may not be sufficient to combat with *Vata Dosha*. Hence *Abhyanga* along with *Basti* helps to yield better result.

#### 2. *Gatisanga*

**Table No. 2: Showing the mean of *Gatisanga* within the groups.**

Group	<i>Gatisanga</i> mean		
	BT	AT	15 <sup>th</sup> Day
Group A	2.6667	1.8667	1.4667
Group B	2.4667	1.2667	1.0000

In the current study, on comparing within the groups, i.e. Group A and in Group B, both groups showed statistically highly significant improvement in *Gatisanga*. On comparing between the groups, it was found that Group B showed better improvement than group A after treatment in *Gatisanga*, but there is no significant improvement seen after follow up in both the groups. In this study *Gatisanga* is the one symptom which occurred initially in most of the patients. Good improvement might be due to *Brahatyadi Yapana Basti* which acts as both *Shodhana* as well as *Brumhana*. Due to its dual effect it was able to break the *Avarana* pathology in some extent.

### 3. *Vakvikriti*

**Table No. 3: Showing the mean of *vakvikriti* within the groups.**

Group	Vakvikriti mean		
	BT	AT	15 <sup>th</sup> Day
Group A	1.733	1.0667	.8667
Group B	2.2000	1.2000	.7333

In the current study, on comparing within the groups, i.e. Group A and in Group B, Group A showed better improvement after treatment; but there is significant change in Group B after follow up in *Vakvikriti*. On comparing between the groups, it was found that there are no significant changes seen in both groups, but Comparatively, Group B improved more than Group A did. Dysarthria are common in patients with Parkinson's disease. *Vakvikriti* has been explained in eighty types of *Vata* vitiated disorders. *Abhyanga* and *Brahatyadi Yapana Basti* aid in reducing *Vata Dosha*, thereby lowering *Vakvikriti*.

### 4. *Stambha*

**Table No. 4: Showing the mean of *Stambha* within the groups.**

Group	Stambha mean		
	BT	AT	15 <sup>th</sup> Day
Group A	2.8000	2.000	1.8000
Group B	2.5333	1.4000	.9333

In the current study, on comparing within the groups, i.e. Group A and in Group B, Group B showed more significant improvement in *Stambha*. On comparing between the groups, it was found that there are no significant changes seen in both groups, but Group B showed better improvement compared to Group A. *Dalhana* defined *Stambha* as immobility<sup>[11]</sup> (Su. Ni.1/27). According to *Charaka*, *Kashaya Rasa* produce *Stambha*<sup>[12]</sup> (Ch. Su. 26). It shows the involvement of *Vata* and *Kapha* in the disease. *Stambhana* is also sign of *Avarana* of *Vyana* by *Kapha*<sup>[13]</sup> (Su. Ni. 1/39). Again, due to its dual effect of *Brahatyadi Yapana Basti* acted upon both *Vata Dosha* and *Kapha Dosha* by removing the *Avarana* pathology in disease. *Abhyanga* helped in *Vatashamana*.

### 5. *Matiksheena*

**Table No. 5: Showing the mean of *Matiksheena* within the groups.**

Group	Matiksheena mean		
	BT	AT	15 <sup>th</sup> Day
Group A	.46667	.3333	.2667
Group B	.5333	.3333	.2667

In the current study, on comparing within the groups, i.e. Group A and in Group B, there is no significant improvement seen in any group after treatment and after follow up. On comparing between the groups, there was no significant improvement seen in any group. There is slight improvement seen in Group A after treatment compared to Group B, but still is statistically nonsignificant. There is no difference after follow up on comparing between the groups. *Abhyanga* and *Yoga Basti* course won't be able to reverse the intellectual impairment in short time.

## 7. Picking of pin

**Table No. 6: Showing the mean of Picking of pin within the groups.**

Group	Picking of pin mean		
	BT	AT	15 <sup>th</sup> Day
Group A	2.2667	1.7333	1.3333
Group B	2.4667	1.3333	.8667

In the current study, on comparing within the groups, i.e. Group A and in Group B, Group A showed significant changes after treatment but more significant after follow up. Group B showed statistically highly significant improvement in picking of pins after treatment and after follow up. On comparing between the groups, it was found that Group B showed significant improvement than group A after treatment, but there is no significant improvement after follow up. Tremors have been greatly reduced as a result of *Vatashamana* after *Basti* and *Abhyanga*, which has made it easier to pick up pins.

## 8. Buttoning time

**Table No. 7: Showing the mean of Buttoning time within the groups.**

Group	Buttoning time mean		
	BT	AT	15 <sup>th</sup> Day
Group A	2.3333	1.8000	1.5333
Group B	2.6000	1.5333	.7333

In the current study, on comparing within the groups, i.e. Group A and in Group B, after therapy, Group A exhibited little improvement, followed by a more significant improvement after follow up. Group B showed statistically highly significant improvement after treatment and after follow up. On comparing between the groups, it was found that Group B showed significant improvement than group A in buttoning time.



## 9. Rapid alternating movement

**Table No. 8: Showing the mean of Rapid alternating movement within the groups.**

Group	Rapid alternating movement mean		
	BT	AT	15 <sup>th</sup> Day
Group A	.8667	.9333	1.3333
Group B	.6000	1.1333	1.2667

In the current study, on comparing within the groups, i.e. Group A and in Group B, Group A showed no significant improvement after treatment, and significant improvement after follow up. Group B showed statistically significant improvement after treatment and after follow up. On comparing between the groups, there is no significant difference in rapid alternating movement. Given that *Shodhana* and *Vatashamana* both facilitate rapid movement, *Brahatyadi Yapana Basti* alone and *Brahatyadi Yapana Basti* combined with *Abhyanga* have the same effect on rapid alternating movement.

## 10. Walking time

**Table No. 9: Showing the mean of Walking time within the groups.**

Group	Walking time mean		
	BT	15 <sup>th</sup> Day	AT
Group A	2.4667	2.0000	1.7333
Group B	2.6000	1.6666	1.0667

In the current study, on comparing within the groups, i.e. Group A and in Group B, Group A showed some improvement after treatment and highly significant improvement after follow up. Group B showed statistically highly significant improvement in walking time. On comparing between the groups, there was no significant improvement seen after treatment, but it was found that Group B showed highly significant improvement after follow up than group A in walking time.

## 11. Memory

**Table No. 10: Showing the mean of memory within the groups.**

Group	Memory mean		
	BT	AT	15 <sup>th</sup> Day
Group A	1.6667	1.7333	1.7333
Group B	1.8667	1.8667	2.0000

In the current study, on comparing within the groups, i.e. Group A and in Group B, there is no significant improvement seen in memory. On comparing between the groups, it was found that there is no difference. There is not much statistical significance, may be because memory



was not significantly affected in the subjects under study.

## DISCUSSION

*Brahati, Knatakari, Shatavari, and Guduchi* are the *Dravyas* for *Ksheerapaka*; *Madhuka*, and *Madana Pippali* are the *Kalka Dravya* in the *Brahatyadi Yapana Basti*<sup>[14]</sup> stated in the *Charaka Samhita siddhi sthana*. Mainly *Brahati, kantakari* and *Guduchi* included in the *Basti* are of *Ushnaveerya* and also having *deepana, pachana* and *kaphavata shamana* property. Other ingredients like *ksheera, ghrita, yashtimadhu, shatavari* are *balya* and *brahmana*. *Madana* helps in *shodhana*. All these together acts as *rasayana*.

Parkinson's disease affects 7 to 10 million people worldwide. Rest tremor, rigidity (stiffness), bradykinesia (slowing), and gait impairment with postural instability are the clinical hallmarks of Parkinson's disease<sup>1</sup>. According to Ayurveda, Parkinson's disease can be compared to "Kampavata". *Kampavata* exhibits *karapadatalekampa, dehabhramaduhkhita, nidrabhanga, and matihksheena* as indications and symptoms. *Vepathu*<sup>[15]</sup>, *Pranavrutasamana*<sup>[16]</sup>, and *Kaphavrutavyana* are other Parkinson's disease prospects. Symptoms like *gadgada mookata* found in *pranavruta samana* which can also be correlated to symptoms like hypophonia seen in Parkinson's Diseases Parkinson's disease should be treated in a way that restrains *Dhatukshaya* and *Avarana*, the intensified *Vata Dosha*. Therefore, *Yapanabasti*<sup>8</sup> is the prime treatment for parkinsonism. *Brahatyadi yapana basti* are having properties that not only pacify *Vata* but also help to maintain the *Samavastha* of *Pitta* and *Kapha*. According to Sushrutaacharya, the word "Yapana" has the meanings *Dharanam, Poshanam, and Rogashamanam*. The *Bheda* of *Niruha Basti* is *Yapana Basti*. *Yapana Basti* is the *Basti* that sustains good health for an extended duration. They can be provided regardless of *Kala* or *Ritu*, they are known as *Ubhayarthakari* because they serve as both *Shodhana* and *Shamana, Sadhyo Balajanana* and *Rasayana*.

*Abhyanga* is mentioned by *charakaacharya* in *kevala vataroga chikitsa*. Hence, considered to be helpful in relieving symptoms like *vepathu (Nanatmaja vata vikara)*.

Being a *Yapana Yasti*, the *Brahatyadi Yapana Basti* serves as both a *Shodhana* and a *Brumhana*. acts on both the pathology related to intestinal gut pathology as well as the pathology of Parkinson's disease, such as neurodegeneration in the brain. *Agni* is strengthened, and *Vibhandha, Sadyobalajanana, Balya, and Deepana* are revived. Acting as *Rasayana* are *Brumhana, Balavarnakara, Nirupadrava, Vrushyatama*, and others.

*Vata* and *Kapha*'s functioning can be controlled with the use of *Sarvanga Abhyanga*. Through the adoption of *Abhyanga*, the patient's body also achieves *Dridata*. It also helps in *Vatashamana* and *Jara Vyadhi Nashana*. *Abhyanga* provides a passive type of exercise even for individuals who are unable to engage in active physical activity due to infirmity and advanced age. *Rasa Panchak* of *Bala*.

*Taila* having *Ushan Virya* and *Tridosahar* property. *Tila* and *Bala* having *Vataharanaam* property. *Bala Taila* makes it potent in alleviating *Vata dosha*. Thus, *Bala Taila Abhyanga* and *Yapana Basti* work together to alleviate symptoms and improve quality of life.

## CONCLUSION

30 patients of either sex suffering from Parkinson's disease, who attended the SDM Ayurveda Hospital, were divided into 2 groups and subjected to open clinical study with pre-test and post-test design. The patients in Group A were treated with *Brahatyadi yapana basti* and Group B were treated with *Brahatyadi yapana Basti* along with *Abhyanga* in *Yoga Basti* pattern. Assessment has been done after treatment and after follow up of 16 days course. After completion of the study the following are the conclusions drawn.

*Brahatyadi Yapana Basti* being a *Yapana Basti* acts as *Shodhana* as well as *Brimhana*. It is *Sadyobalajanana*, *Vatahara*, and *Rasayana*. *Abhyanga* being *Bahya Sneha* helps in Pacifying *Vata*. *Bala Taila* helps in mitigating *vata* and *Vatakapha*.

*Brahatyadi yapana basti* along with *Abhyanga* showed good improvement in *Kampa*, *Gatisanga*. *Brahatyadi Yapana Basti* alone has shown good improvement in *Matiksheena*, but still is statistically insignificant. *Brahatyadi Yapana Basti* alone has showed better improvement after treatment in *Vakvikriti*. *Brahatyadi Yapana Basti* along with *Abhyanga* showed better improvement after follow up as compared to *Brahatyadi Yapana Basti* alone.

There are no changes seen in *Stambha* either with *Brahatyadi Yapana Basti* or *Brahatyadi Yapana Basti* along with *Abhyanga* after treatment. But significant improvement seen with *Brahatyadi Yapana Basti* and *Abhyanga* after follow up. Objective criteria's like Walking time, Buttoning time, Rapid alternating movement, and picking of pins were taken to assess the *Chestahani* (*Chesta sanga*, *Gati sanga*) and *Kampa*. *Brahatyadi Yapana Basti* along with *Abhyanga* has shown good improvement in picking of pins, buttoning of time, Rapid alternating movement. There are no changes seen in walking time with *Brahatyadi Yapana*

*Basti* or *Brahatyadi Yapana Basti* and *Abhyanga* after treatment. But *Brahatyadi Yapana Basti* and *Abhyanga* showed significant improvement after follow up. There is not much statistical significance either with *Brahatyadi Yapana Basti* or *Brahatyadi Yapana Basti* along with *Abhyanga*, may be because memory was not significantly affected in the subjects under study. To conclude *Brahatyadi Yapana Basti* along with *Abhyanga* has showed better improvement in treating *Kampavata*.

## REFERENCE

1. Agnivesha. Charaka Samhita, edited by Jadavji Trikamji Acharya, Chaukamba Prakashan, Reprint, 2009; Varanasi PP 738; page no. 132.
2. Basavarajeeyam, Prof Krishnamoorthy: chapter 06, verse 128.
3. Acharya J T., editor(1<sup>st</sup> ed). Chakrapanidatta virachitaya Ayurvedadeepika Charaka Samhita of Agnivesha, chikitsaSthan; vatarvyadhiChikitsa: Chapter28, verse 228-229. Varanasi: Choukambha Publications, 2019; p.626.
4. Acharya J T., editor(1<sup>st</sup> ed). Chakrapanidatta virachitaya Ayurvedadeepika Charaka Samhita of Agnivesha, chikitsaSthan; vatarvyadhiChikitsa: Chapter28, verse 204-205, Varanasi: Choukambha Publications, 2019; p.625.
5. Acharya J T., editor(1<sup>st</sup> ed). Chakrapanidatta virachitaya Ayurvedadeepika Charaka Samhita of Agnivesha, sutraSthan, maharogadhyaya, Chapter20, verse 11, Varanasi, Choukambha Publications, 2019; p.113.
6. Sushrita, Sushurata samhita. Edited by vaidya Jadvji Trikamji acharya. Reprint 2010. Chaukhamba Sanskrit sansthan Varanasi, PP: 824 Page no: 263
7. Agnivesha. Charaka Samhita, edited by Jadavji Trikamji Acharya, Chaukamba Prakashan, Reprint, 2009; Varanasi, PP :738 page no:625.
8. Madhavakara.Madhava nidanam. Edited by Dr.brahmananda tripathi. Chaukhamba subharthi prakashana. Reprint, 2008; Varanasi vol 1 PP: 658 page no: 551.
9. Vachaspatyam – Shri Taranatharaka Vachaspati Bhat, 3rd Edition, 1969, Chaukambha Sanskrit Series, Varanasi, Pp – 5442; page – 4864.
10. Vaidyaka Shabdasindhuh - Kaviraja Umeshchandra Gupta & Kaviraja Nagendranathasena, 4th edition, 1999; Chaukhambha Orientalia, Varanasi, Pp – 1212, Page number – 856.
11. Vagbhata virachita Ashtanga Hrudaya, chikitsasthana: Chapter 21, verse 72-80, Varanasi: Choukambha Publications, 2019; p.728.

12. <https://www.medicalnewstoday.com/articles/does-alcohol-make-parkinsons-symptoms-worse-2#summary>.
13. Sushruta Samhita, Acharya Priyavrutsharma, Choukambha Publication, 10<sup>th</sup> Edition, 2019; Pp- 824, page no – 261.
14. Sushruta Samhita, avharyapriyavat sharma, reprint 2019, choukambha publication Varanasi, Pp 824, page no 548.
15. Madhavakara. Madhava nidanam. Edited by Dr.brahmananda tripathi. Chaukhamba subharthi prakashana. Reprint, 2008; Varanasi vol 1 PP: 658 page no: 551.
16. International congress on Ayurvedic concepts and treatment of neurological disorders 10-12 January 2002. Avritavata and its importance in clinical practice. -Prof. Singh Gurdip Ex-dean, professor and head of Kayachikitsa. Institute of postgraduate teaching and research in ayurveda, Gujarat Ayurveda University, Jamnagar(India)- 360018.