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# Ayurveda based Non Pharmacotherapeutic Integrated Intervention in Sandhivata w.s.r. to Osteoarthritis

Vidya P Gani<sup>1</sup>, Padmaveer PS<sup>2</sup>, Ashok Patil<sup>3</sup>

<sup>1,2</sup>Post Graduate Scholar, Dept. of Swasthavritta & Yoga, KAHER's Shri BMK Ayurveda Mahavidyalaya, Belagavi, Karnataka, India.

<sup>3</sup>Professor & HOD, Department of Swasthavritta & Yoga, KAHER's Shri BMK Ayurveda Mahavidyalaya, Belagavi, Karnataka, India.

## ABSTRACT

*Sandhivata* also known as Osteoarthritis, is a degenerative disease of the joints that mostly affects weight-bearing joints such as the elbow, knee, and so on. It causes discomfort and limits movement in the affected joint. The *Sandhivata* (Osteoarthritis) may be a form of *Vatavyadhi*, which usually manifests in adulthood due to *Dhatukshaya* (emaciation of tissues). Among the *Vatavyadhi*, *Sandhivata* is one such clinical entity that affects locomotion; *Dhatukshaya* is a major factor in this condition, which is characterised by specific symptoms including joint discomfort, swelling, stiffness, painful and restricted joint movement, etc. Osteoarthritis (OA), the most prevalent degenerative joint disease, results in excruciating swelling and irreversible destruction to the body's joints. As of now, the molecular causes of OA remain unknown. The development of osteoarthritis (OA) is a diverse illness that affects the entire joint and changes a number of different tissues. Classics have listed several Ayurvedic formulations for treating *Sandhivata*, including *Kwatha*, *Guggulu Kalpana*, *Ghreeta*, *Taila*, *Gutika*, and *Rasa Aushadhi*, as well as *Panchakarma* procedures including *Abhyanaga*, *Swedana*, *Basti*, *Janubasti*, *Rasayana* therapy, and *Agnikarma*, along with these dietetics also plays a major role to reduce the disease severity. In this article we try to collect and compile all the dietary preparations, food articles and Yoga Asanas explained in *Samhithas* which will be easier to adopt for people suffering from *Sandhivata*.

**Key words:** *Sandhivata*, *Osteoarthritis*, *Diet*, *Pathya-Apathya*, *Non-Pharmacotherapeutic integrated interventions (NPI)*

## INTRODUCTION

*Sandhigata Vata* is a type of *Vata Vyadhi*, characterized by manifestations like joint pain (*Sandhishoola*) and joint swelling (*Sandhishopha*). Osteoarthritis (OA) is a degenerative joint condition that signifies the breakdown of movable, synovial-lined joints. The knee joint's OA falls into the category of inflammatory disorders, closely resembling *Sandhigata Vata* in *Ayurveda* in terms of causes, progression, and clinical

characteristics.<sup>[1]</sup> The clinical presentations of osteoarthritis (OA) vary from mild to severe, impacting joints in the hands and weight-bearing joints like the knees, hips, feet, and spine. OA is identified as a clinical syndrome marked by joint pain, tenderness, restricted movement, crepitus, occasional swelling, and varying levels of inflammation, all without systemic effects.<sup>[2]</sup> As per epidemiological data, osteoarthritis (OA) in India is prevalent in the range of 22-39%. Radiographic signs of OA are observed in a significant proportion of individuals aged 65 and above, with 80% of them being over 75 years old. Approximately 11% of those aged over 65 experience symptomatic OA in the knee. In India, 5.3% of males and 4.8% of females are in the age group exceeding 65 years.<sup>[3]</sup> In Worldwide the data suggests that prevalence of Osteoarthritis ranges from 14.3%-17.8%.<sup>[4]</sup> *Acharya Charaka* initially identified the condition as *Sandhigata Anila* within the category of *Vata Vyadhi*. He characterized it as a distinct ailment marked by symptoms such as swelling (*Sotha*), which is detectable through touch as *Vatapurna Driti Sparsha*,

### Address for correspondence:

Dr. Vidya P Gani

Post Graduate Scholar, Dept. of Swasthavritta & Yoga, KAHER's Shri BMK Ayurveda Mahavidyalaya, Belagavi, Karnataka, India.

E-mail: vidyagani15@gmail.com

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and pain during flexion and extension of the joints, known as *Akunchana Prasarana Vedana*.<sup>[5]</sup> Chakrapani acknowledges *Sandhivata* as *Gulpha Vata* or *Sandhigata Vata*, categorizing it as *Kashtasadhya*, implying that its treatment is challenging and requires significant effort. Acharya Sushruta has detailed the ailment in the *Vatavyadhi* section, specifically under the heading of *Sandhigata Vata*. *Sandhivata* is recognized as both a *Marma* (vital point) and a disorder occurring along the *Madhyama Roga Marga* (intermediate disease pathway). It encompasses various structures such as *Snayu* (tendons), *Sira* (vessels), *Asthi* (bones), *Peshi* (muscles), *Kandara* (ligaments), and more.<sup>[6]</sup> Nonpharmacological interventions (NPI) encompass treatments that do not involve medications, such as physical activity and psychosocial interventions like speech-based therapies. These approaches aim to prevent, manage, or alleviate health issues, taking various forms such as products, methods, programs, or services. Users must understand the content of these interventions, which are linked to biological mechanisms and/or psychological processes. NPI encompasses a range of techniques, including physiotherapy (e.g., manual manipulations, electromagnetic radiations, electrical and ultrasound sources), assistive devices, psychotherapy, behavioural modifications (e.g., lifestyle habits, nutrition), occupational therapy, speech, and language therapy, as well as complementary and alternative medicine.<sup>[7]</sup> *Pathya* refers to the dietary and lifestyle practices that have a calming effect on the mind, are beneficial to the body, and provide essential nutrients. On the other hand, *Apathya* represents the opposite, signifying practices that are not conducive to well-being or are not beneficial for the body and mind.<sup>[8]</sup> *Ayurveda* emphasises on *Pathya-Apathya* more than drugs, so that the food itself will be considered as *Bheshaja* (medicine). The significance of *Pathya* and *Apathya* in *Ayurveda* is highlighted by the fact that Acharya Charaka explicitly detailed *Pathya* as a synonym for treatment. This emphasizes the critical role of appropriate dietary and lifestyle practices in maintaining health and facilitating therapeutic interventions in *Ayurvedic* principles.<sup>[9]</sup> Most people

followed inconsistent and incompatible dietary habits in their daily lives. This behaviour leads to an imbalance in the digestive system (*Agni Vaishamy*) and an aggravation of the *Vata Dosha* (*Vataprakopa*), ultimately causing a reduction in bodily tissues (*Dhatukshaya*). When coupled with the aging process, these factors contribute to the onset of joint-related conditions referred to as *Sandhivata*.<sup>[10]</sup>

Studies indicate that engaging in regular exercise can be effective in managing symptoms associated with osteoarthritis. These symptoms include pain, reduced flexibility, decreased strength, and morning stiffness. By addressing and controlling these symptoms through exercise, overall function can improve, leading to an enhancement in the individual's quality of life.<sup>[11]</sup> In a recent study conducted by Ebnezar *et al.* (2012) examining the impact of *Yoga* exercises on pain, morning stiffness, and anxiety in 250 patients with knee osteoarthritis. The participants were divided into two groups: a control group receiving only physical therapy and an experimental group receiving both physical therapy and yoga. The findings of the study suggested that simultaneous participation in yoga and physical therapy yielded more positive effects compared to receiving physical therapy alone.<sup>[12]</sup> The practice of *Hatha Yoga* proves to be a valuable non-medicinal approach in the rehabilitation of patients with knee osteoarthritis. It is associated with a noteworthy reduction in pain and symptoms, as well as a substantial increase in daily activities, sports and spare-time activities, ultimately leading to an improvement in overall quality of life.<sup>[11]</sup>

## AIM AND OBJECTIVES

To develop an integrated non pharmacotherapeutic intervention protocol for *Sandhivata* (OA)

### Objectives

To compile and develop Ayurveda based integrated non pharmacotherapeutic protocol for *Sandhivata*.

## MATERIALS AND METHODS

Literature search of *Sandhivata* have been done on *Charaka Samhitha*, *Raja Nighantu*, *Kashyapa*

*Samhitha, Madanaphala Nighantu, Baishajya Ratnavalli, Yoga Rathnakara and Bhaishjya Ratnavali* and other *Yoga* related textbooks.

## REVIEW OF LITERATURE

**Pathya Ahara** according to different *Samhitas* exclusively for *Sandhivata* are as follows -

**Charaka Samhitha** - *Kulattha* (Horse Gram), *Lasuna* (Garlic), *Shigru* (Moringa Leaves), *Amla* (Indian Gooseberry), *Draksha* (Raisins)

**Raja Nighantu** - *Hitakara Dravya Samooha* - *Ghritha* (Ghee), *Saindhava* (Salt), *Dhanyaka* (Coriander), *Jeeraka* (Cumin Seeds), *Ardraka* (Ginger), *Tanduleeyaka* (Thorny Amaranth), *Patola* (Pointed Gourd), *Alabu* (Bottle Gourd), *Godhuma* (Wheat), *Jeerna Shali*, *Gokshura* (Tribulus), *Hamsodaka* and *Mudga* (Green Gram).

**Yoga Rathnakara** - *Kulatha* (Horse Gram), *Shamaka* (*Barnyaed millet*), *Kodrava* (*Kodo millet*), *Raktashali* (Red Rice), *Vastuka*, *Shigru* (*Moringa oliefera*), *Varshabu* (*Boerhavia diffusa*), *Karavella* (Bitter Gourd), *Patola* (Pointed Gourd), *Kushmanda* (Ash Gourd), *Godhuma* (Wheat), *Masha* (Black Gram), *Adraka* (Ginger), *Tapatanirr*, *Lasuna* (Garlic) With Buttermilk, *Jangala Mamsa* (*Kukkuta*, *Tittiri*, *Barhi*, *Chataka*) *Shilendra*, *Takra* (Butter milk), *Garjara* (Carrot), *Parvathe*, *Dadima* (Pomegranate), *Parushaka* (Falsa Fruit), *Badara* (Ber Fruit), *Draksha* (Resins), *Tambula*, *Matsyandika*.

**Bhaishjya Ratnavali** - *Vatahara* (*Vata* pacifying), *Madhura* (Sweet), *Amla* (Sour), *Lavana* (Salt) and *Snigdha* (Unctuous), *Sarpi* (Ghee), *Taila* (Oil), *Vasa* (Fat), *Majja* (Bone Marrow), *Godhuma* (Wheat), *Purana Dhanya*, *Masha* (Black Gram), *Kulattha* (Horse Gram), *Mamsa*, *Mishi* (Fennel Seed), *Dunduka*, *Kataka*, *Raktashali* (Red Rice),

**Madanapala Nighantu** - *Dadima*-*Amlaka* *Yusha*

**Kashyapa Samhitha Khillasthana** - *Kambalika* *Yusha*, *Lashuna* *Yusha*

**Apathya Aharas** which are found in classical texts are as follows:

*Yavanala* (Great Millet), *Yava* (Barley), *Kodrava* (Kodo Millet), *Gavedhuka*, *Shali* (Rice), *Nartaki* (Finger Millet), *Adhaki* (Pigeon Pea), *Masura* (Lentil), *Chanaka* (Chickpea), *Satina* (Pea), *Nishpawa* (Indian Bitter Bean), *Rajamasha* (Cow Pea), *Shushka Mamsa* (Dry Meat), *Palaka* (Spinach), *Karkati* (Cucumber), *Apakawa Kadali* (Unripe Banana), *Shita Jala*, *Kusumbha Taila*, *Shringataka* (Water Chest Nut), *Jambu* (Jambhul), *Apakva Amra*, *Areca Nut*.

## Therapeutic diet advices for Sandhivata in Samhitas:<sup>[13-17]</sup>

S N	Vargas					
1.	<i>Shooka</i>	<i>Rakta Shaali</i> (Red rice)	<i>Kodaraa</i> ( <i>Anupa</i> )	<i>Shashtika Shaali</i> ( <i>Navara Rice</i> )	<i>Godhuma</i> (Wheat)	
2.	<i>Shami</i>	<i>Kulatha</i> (Horse gram)	<i>Masha</i> (Black gram)	<i>Tila</i> (Sesame seeds)	<i>Sarshapa</i> ( <i>Mustard seeds</i> )	<i>Atasi</i> (Flax seeds)
3.	<i>Mamsa</i>	<i>Anupa Mamsa</i> , <i>Chataka</i> ( <i>Sparrow</i> )	<i>Matsya</i> (fish), <i>Kukkuta</i> ( <i>Chicken</i> )	<i>Chaga</i> ( <i>Goat</i> ), <i>Mesha</i> ( <i>Sheep</i> )	<i>Vrshaha</i> ( <i>Male cattle</i> ), <i>Mahisha</i> ( <i>Buffalo</i> )	<i>Tittiri</i> ( <i>partridge</i> ), <i>Barhi</i> ( <i>Peacock</i> ),
4.	<i>Shaka</i>	<i>Kushmanda</i> ( <i>Ash Gourd</i> ), <i>Changeri</i> ( <i>Creeping wood sorrel</i> )	<i>Potaki / Upodaki</i> ( <i>spinach</i> ), <i>Chinchinda</i> ( <i>snake gourd</i> )	<i>Mahakoshataki</i> ( <i>sponge gourd</i> ), <i>Bimbi</i> ( <i>ivy gourd</i> )	<i>Koshavati</i> ( <i>ridge gourd</i> ), <i>Grnjanka</i> ( <i>Carrot</i> )	<i>Patola</i> ( <i>Bottle guard</i> ), <i>Shigru</i> ( <i>Moringa</i> )
5.	<i>Phala</i>	<i>Pakva Amrapala</i> ( <i>Ripened Mango</i> )	<i>Pakwa Kadali</i> ( <i>Unripe banana</i> ), <i>Narikela</i>	<i>Pakva Kapittha</i> ( <i>Wood apple</i> ), <i>Naranga</i>	<i>Nimbuphala</i> ( <i>Lemon</i> )	<i>Parushaka</i> ( <i>false fruit</i> )

		) <i>Amrat aka</i> (Guava )  <i>Panasa</i> (Jackfruit)	(Coconut) <i>Pakwa Kalinda</i> (Watermelon)	(Orange) <i>Dadima</i> (Pomegranate)	<i>Amlika</i> (Gooseberry)  <i>Apkva Vrkshamla</i> (Kokum)	<i>Badara</i> (Indian Bear fruit)  <i>Draksha</i> (dried grapes)
6.	<i>Harita</i>	<i>Ardra ka</i> (Ginger)  <i>Jambira</i> (Lemon)	<i>Balamul aka</i> (Tender radish)	<i>Palandu</i> (Onion)	<i>Dhanyaka</i> (Coriander leaves)	<i>Lasuna</i> (Garlic)
7.	<i>Madhya</i>	<i>Sura</i> (Strong water)	<i>Madira</i> (Strong water)	<i>Surasava</i> (Alcoholic Preparation)	<i>Amlakanjika</i> (Fermented rice water)	
8.	<i>Jala</i>	<i>Ushna Jala</i> (Hot water)	<i>Shritashita Jala</i> (Boiled and cooled water)			
9.	<i>Gorasa</i>	<i>Gavya Paya</i> (Cow milk)  <i>Avika Paya</i> (Sheep milk)	<i>Dadhi</i> (Curd)	<i>Navaneeta</i> (Butter)  <i>Go</i>	<i>Takra</i> (Butter milk)	<i>Ghrtha</i> (Cow ghee)
10	<i>Ikshu</i>	<i>Ikshu</i> (Sugar cane)	<i>Guda</i> (Jaggery)	<i>Sita</i> (Sugar)	<i>Khanda Sharkara</i> (Sugar candy)	
11	<i>Krutana</i>	<i>Manda</i> (Gruel water)	<i>Vilepi</i> (Tick gruel)	<i>Mamsa RASA</i> (Meat soup)	<i>Raaga</i> (Chutney)	<i>Payasa Krishara</i>

		<i>Peya</i> (Gruel)	<i>Odana</i> (Cooked rice)	<i>Rasala</i> (Sweet preparation)	<i>Shadava</i> (Pickles)  <i>Vesawara</i> (Boneless meat soup)	<i>Kulath a</i> <i>Yusha</i> (Horse gram soup)
12	<i>Aharopayogi</i>	<i>Tila Taila</i> (Sesame oil)  <i>Eranda Taila</i> (Castor oil)	<i>Atasi Taila</i> (Flax seed oil)  <i>Sharsha pa Taila</i> (Mustard oil)	<i>Maricha</i> (Pepper)  <i>Hingu</i> (Asafoetida)  <i>Saindhava</i> (Salt)	<i>Shushka Ardraka</i> (Dry ginger)	<i>Pippali</i> (Long pepper)

A *Madhyama Roga Margagata Vatika* illness called *Sandhigata Vata* occurs when vitiated *Vata* lodges in *Sandhi*. Therefore, medications that work on both *Vata* and *Asthi* should be chosen in order to treat *Sandhigata Vata*. Charaka says that *Tikta Dravya* and *Kshira* should be the treatments for *Asthi Dhatu Dushti*. *Vayu* and *Akasha Mahabhuta* are the dominant figures of *Tikta Rasa*. As a result, it has attraction for bodily elements like *Vayu*-dominant *Asthi* and *Akasha Mahabhuta*. The fundamental idea of *Ayurvedic* medicine is *Sthanam Jayate Purvam*, even if *Tikta Rasa* aggravates *Vayu* and may intensify the pathogenic process of *Sandhigata Vata*. *Sandhi*, the location of *Shleshaka Kapha*, is the principal site of *Sandhigata Vata*. So, *Tikta Rasa* satisfies the concept of reducing the *Kapha Dosha*.

The majority of the *Ahara Dravya* mentioned here include *Madhura, Katu Vipaka, Ushna Virya,* and *Tikta Rasa*. The metabolic stage, or *Dhatvagni*, is elevated by *Tikta Rasa*. All of the *Dhatu*s will receive more nourishment as *Dhatvagni* increases. As a result, *Majja Dhatu* and *Asthi Dhatu Kshaya* may diminish and *Asthi Dhatu* and *Majja Dhatu* may stabilize. Therefore, *Asthi Dhatu* degeneration might not happen quickly. One could argue that it slows down the processes of deterioration. *Deepana, Pachana,* and *Rochana* qualities are present in *Tikta Rasa*. Thus, it strengthens all of the body's joints and contributes to the enhancement of overall health.<sup>[18]</sup> On the other side,



*Tikta Rasa* has the *Lekhana* property, which aids in patients' weight loss and osteoarthritis management. Additionally, *Tikta Rasa* possesses the qualities of *Jwaraghna* and *Daha Prashamana*, which may function as an anti-inflammatory and lessen joint discomfort and swelling.<sup>[19]</sup> In addition to *Balya*, *Agnivardhaka*, *Madhura*, *Saumya*, *Sheeta Virya*, *Shulahara*, *Jwarahara*, *Vrishya*, and *Vayasthapaka*, *Ghrita* is *Vata-Pittashamaka*.<sup>[20]</sup> As a result, it calms *Vata*, enhances the body's general health, and revitalizes the body. Aids the *Sandhigata Vata's Samprapti Vighatana* as a result. Similar to *Yogavahi*, *Ghrita* has properties that help increase the bioavailability of other medications without sacrificing any of their own unique qualities. Additionally, *Ghrita* contains Vitamin D, which is crucial for the utilization of calcium and phosphorus in the synthesis of blood and bones. Most of the above-mentioned *Ahara Dravya* are *Ushna* in *Veerya*. It functions as a *Medohara* because of its *Ruksha* and *Vishada Guna*. Research indicates that the medicine is mostly present in *Ushna Virya*, which aids in calming down agitated *Vata* and relieving pain.

**Planning of dietary preparations for a day:**

Preparations	Option 1	Option 2	Option 3	Option 4
Morning beverages	Lemon grass tea	Cinnamon tea	Ardra tea	
Breakfast	Kulatha Yoosha	Veg Upma	Oats Upma	Mudga Yusha
Mid-day snacks	Fruits	Dry fruits & seeds		
Mid-day beverage	Lasuna Ksheerapaka	Haridra Ksheerapaka	Butter milk	Rasanadi Ksheerapaka
Lunch				
Roti (in Numbers)	Jawar Roti	Shigru stuffed Chapati	Chapati	Multi millet Roti
Vegetable sabji (in portions)	Patola	Shigru	Kushman da	Potaki

Rice item (in portions)	Brown rice	Dashamola Yavagu	Khichadi
Dinner			
Roti (in Numbers)	Ragi roti	Rice roti with dill leaves	Methi stuffed chapati
Vegetable sabji (in portions)	Koshavati	Mahakosha	
Rice item (in portions)	Manda/ Peya	Vilepi	

**Yoga Asanas and Pranayama advised for Sandhivata**

	Option 1	Option 2	Option 3	Option 4	Option 5	Option 6
Asana	Tadasana (mountain pose) Shavasana (corpse pose, palms up)	Katichakrasana (lateral arc pose) Paschimottasana Setubandhasana	Konasana (angle pose) Virabhadrasana Dhanurasana	Urdhwa hastottasana (upstretched arms posture) Chakravakrasana	Pavana muktasana (wind removing pose) Trikonasana	Bhujangasana (cobra pose) Vrikshasana
Pranayama	Nadishodhana Pranayama (alternate nostril breathing)	Surya Bhedana	Bhramari (humming bee breathing)	Ujjayi	Bhastrika	
Mudra	Vayu Mudra	Sandhi Mudra	Prithvi mudra	Varun / Jal Mudra	Vata-Nashak / Vaata Shamak / Vishnu Hasta Mudra	
Exercises	(Exercising muscles controlling the arms)	(Exercising muscles controlling)	exercising muscles controlling the palms	exercising muscles controlling the knees	exercising muscles controlling the	Standing leg lifts Sit and stand

		ing the wrists)			ankles and feet	Kick-backs
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*Yoga* is mind-body interventions, that impart stress management with physical activity may be well suited for osteoarthritis. The potential mechanism for yoga therapy-related changes in OA symptoms is unknown. The multifactorial approach of *Yoga* therapy includes physical postures (*Asanas*), breathing exercises (*Pranayama*), meditation (*Dhyana*), mental and emotional cultures can help relieve symptoms of OA. *Yoga* therapy procedures can increase cartilage proteoglycan content and prevent cartilage degeneration. This helps strengthen the periarticular muscles that normally contract to stabilize pain. *Yoga* practice can also prevent synovial fluid loss by stretching and strengthening different parts of the body, massaging and bringing fresh blood to internal organs, while rejuvenating the nervous system and lubricating joints, muscles and ligaments. It is said to have various effects on the nervous and circulatory systems, coordination and concentration, and a calming effect on the body. It also suggests that *yoga* practice can help reduce some psychological factors such as stress, anxiety, depression, mood disorders, and improve self-esteem and quality of life in people with chronic pain and arthritis.<sup>[21]</sup>

## DISCUSSION

*Sandhivata* (Osteoarthritis) is a prevailing condition in today's era because of the increased prevalence of obesity and unhealthy lifestyle.<sup>[22]</sup> Osteoarthritis (OA) is a complex condition with multiple contributing factors, and the mechanism leading to joint degradation appears to be more intricate than initially anticipated. Although a correlation exists between obesity and OA, it is not solely attributable to heightened mechanical stresses on joint tissues resulting from weight gain. Other soluble elements, like adipokines, may also significantly contribute to the initiation of OA in individuals with obesity.<sup>[23]</sup> The combined effect of mechanical stress because of weight gain and adipokines together gives rise to the increased symptoms of disease. The *Samprapthi* of *Sandhivata* mentions that the *Vata* increases and

*Kapha* depletes in the joints, which in turn decreases the *Shleshaka Kapha* in joints.<sup>[24]</sup> Thus leading to degenerative changes and causing *Sandhivata*. So, the *Vata* should be controlled as much as possible to get better results in *Sandhivata* management.

## CONCLUSION

The aim for treatment of *Sandhivata* in an obese individual should be reduction of weight.<sup>[20]</sup> For achieving weight reduction, the best methods are adhering to strict diet and life style modifications. So, the *Ayurveda* emphasises the *Vatahara* diet is best in reducing the complications along with local treatment with *Sleshmavardhaka Dravyas* for *Sandhivata*. *Yoga* also has beneficial effect on reducing the symptoms as it increases joint mobility and flexibility there by reduction in pain and inflammation. So, *Vata Hara* diet and *Yoga* can be included in the management protocol for better results.

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