

A REVIEW STUDY ON KAMPAVATA (PARKINSON'S DISEASE) WITH TRIGUNA RASA**Vd. Varsha Gogate^{1*}, Vd. Rahul Jumle², Vd. Suryakant Dwivedi³ and Vd. Pradip Randive⁴**¹Professor *Dravya Guna* Department Smda College & Hospital Ln Uttarkasi Uttarkhand.²H.O.D Department of Bal Roga Shri K.R. Pandav Ayurved College Nagpur.³Assistant Professor *Stri Prasuti Tantra* Department Om Ayurvedic Medical College & Hospital, Betul.⁴Assistant Professor *Bal Roga* Department Om Ayurvedic Medical College & Hospital, Betul.***Corresponding Author: Vd. Varsha Gogate**Professor *Dravya Guna* Department Smda College & Hospital Ln Uttarkasi Uttarkhand.

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INTRODUCTION

Ayurveda is the science that imparts all knowledge of life. It defines health and factors responsible for its maintenance and promotion. It was the science which did not start with fundamental understanding but developed from observation of phenomenon which were then classified, analysed and systematised. One of such science is the science of life, "Ayurveda"

Health is essential for enjoyment of all the worldly pleasures in a righteous manner. Ayurveda defines a useful, harmful, happy and unhappy life and provides knowledge which is beneficial to life in short it discusses all aspects of human life. Ayurveda is the everlasting supreme science of medicine because it deals with every aspects of life, particularly of human being since time immemorial.

The 'Vata' which is the motivator and controller of other two doshas, is responsible for the manifestation of almost all diseases. Vataja nanatmaja vikaras are limited to eighty in various classics, but when we group all the disorders of vata mentioned in various classics, the number exceeds eighty. Major neurological problems come under vata vyadhis. Kampavata as one among them manifests with "Dehabhramana" (postural instability), "Karapada tale kampa" (tremors in hands and legs), "Matiksheena" (dementia), and "Nidrabhanga" (sleeplessness). There are many vata vyadhis commonly seen but Kampavata is one of the rare mentioned under vatavyadhis because of its crippling nature and non availability of curative treatment, this disease has remained a great problem in the ageing society which usually affects after the age of 50 years.

The disease is increasing in its frequency with the world population showing an incidence of 1-2 per 1000 population and has an equal sex distribution.

Historical background of the disease is suggestive of the fact that though, in vedic period the disease 'Vatikrit' was known but the typical clinical entity identical to Kampavata was not mentioned. According to Ayurveda,

Kampavata is a Vata Nanatmaja vikara. During the period of Charaka and Sushruta clinical manifestations of kampavata like kampa, sthamba, chestasanag, vakvikriti etc was not explained as one disease instead explained under various contexts majority of the symptoms of kampavata were found in kaphavrita udana and kaphavrita vyana but no single avarana process completely covers the symptoms of kampavata. Actually many of the experts tried to provide a suitable Ayurvedic nomenclature for the Parkinson's disease e.g. - sakamp-paksaghata and vepathu etc. Sakamp-paksa-ghata was the nomenclature suggested in view of the synonym of Parkinson's disease as paralysis agitans. The term vepathu was considered in view of acceptance of Charak followed by Madhavkar as a separate clinical entity. Both of the above terms need to be appropriately elaborated. Parkinson's disease has its three types.

Viz,

- Idiopathic form
- Arteriosclerotic form
- Post-encephalitic form

The idiopathic form is known as the true Parkinsonism and paralysis agitans, if we consider the sakamp-paksaghata as synonym of paralysis agitans then remaining two forms of the disease or not explainable. Further sakamp-paksa-ghata has no classical basis. The term vepathu though has been widely accepted as alternative term for Parkinson's disease but in view of the following point.

(A) This does not explain the other symptoms of Parkinson's disease except tremor.

(B) Vepathu has been used in different contexts for different meanings eg. in vatika jvara for rigors in

mahaswasa for giddiness and so on.

It initiates to an endless debate.

AIMS AND OBJECTIVES OF STUDY

- 1) To study the literary work in Kampavata.
- 2) To study the literary work in Parkinson's disease
- 3) To evaluate triguna rasa efficacy in kampavata.

Material and Method's

- 1) Refer various samhitas and recent Article and Journal.

Historical review

Records of the past events always enlighten us regarding the depth of subject to understand it scientifically. The methodical record of the past events about Ayurveda begins from the Vedas. Hence it is always must to go through record of the past events before moving into the subject Kampavata and its management. The history of Kampavata can be reviewed under following kala.

1. Veda kala (2500 BC - 1000 B.C)
2. Samhita kala (1000 BC - 100 A.D)
3. Sangraha kala (100 A.D - 800 A.D)
4. Nighantu kala (800 A.D. - 1700 A.D)
5. Adhunikala kala (1700 A.D. onwards)

Samhita kala

Charaka samhita

In Charaka samhita kampavata is found by the name vepathu and has been included in the Nanatmaja vata vyadhi³ some symptoms of kampavata are kampa and sthamba these symptoms are found in some pathological conditions of vatavyadhi, as Charaka explains decrease of pitta and increase of vata and kapha causes symptoms like vepana (kampa) and sthamba. Even Charaka further explains the increase of vayu when affects marma leads to shareera kampa, this concept provides the pathology of tremors relating to brain (marma). Many other references regarding kampa are found in name of vepathu, vepana, etc kampa is also one of symptom of many other diseases like vataja jwara, vataja unmada, ananthavata, vishamasannipatika jwara and vatika pandu.

Sushruta samhita

Acharya Sushruta has mentioned the symptoms like chestasanga, sthamba and gurugatrata in the condition of kaphavrita vyana. He has described vata vyadhi kills the patient when accompanied with complication such as tremors. Tremors have been mentioned as the updrava of prameha. Vepathu described as symptom in sthavaravisha vignyana. Use of Avi ghrita is mentioned for management of kampa. He has explained Tremors as one of the complication of ardita. Kashayapa samhita Vepathu has been listed under the vata nanatmaja disorders.

Bhela samhita

In this treatise, shirakampa has been mentioned to occur due to regular intake of ruksha diet and a person who has got the tendency to develop udavarta is more prone to

this disease. Snehapana, nasya and anuvasana basti are the treatment suggested for shira kampa. Rasnataila has been indicated in the management of gatrakampa. kampa as a symptom is seen in Astimajagata vata.

Sangraha kala

Astanga sangraha and Astanga hridaya In these treatise of Vaghabata, explanations and few references regarding kampavata is available. Kampa as a symptom of parkupita vata is mentioned and also eventually explained kampa as one of symptom of sarvanga vata, even kampa is mentioned in kapha kshaya, pitta kapha kshaya and rasakshaya conditions. Sthamba as a symptom mentioned in condition of mamsagatavata and medhogata vata.

Madhava nidana

Acharya madhava explained the disease vepathu in vatavyadhi for the first time, which is characterised by sarvanga kampa (tremors all over the body) and shirokampa. The commentator vijayrakshita has further explained that in shirokampa the tremors of limbs can also be included which indicates the crucial picture of kampavata (Parkinson's disease)

Sharangadhara samhita

Sharangadhara has mentioned kampa under vatajaroga and treatment for sarvanga kampavata with maharasnadi kwatha is Medicine like maharasnadi kwatha should be taken with food or after food in case of kampavata has been mentioned in his purva kahanda.²⁹ Shira kampa been explained under shiroroga. Various medicines have been explained like Devadarvadi kwatha in kampa, Dhattur taila in shirakampa, 32 Varuni taila in hasta and shirakampa, Mashadi taila in shaka kampa and shira kampa. Shirobasti for seven days will cure even dreadful vata disorders and shirakampa.

Bhavaprakasha

Acharya Bhavamishra has explained symptoms of sthamba and kampa in condition of snayugata vata. He explains even in excessive use of tikta rasa will lead to kampa. In panchakarma vidhi adhaya, explaining bruhana nasya guna, acharya explains bruhana nasya helps in treating tremor.³⁸ While describing sankhya of vatavyadhi, kampa and sthamba are also explained.³⁹ Some scattered references regarding kampa is found as a feature while explaining kalayakhanja⁴⁰ and sarvanga vata lakshana.

Yogaratanakara

He has adopted the description mentioned same of Madhav nidana, he has also explained sarvanga kampa and shiro kampa under the disease vepathu in vatavyadhi chapter.

Chakradatta

In Chakradatta, the treatise of treatment of diseases, the conditions like bahu kampa, shira kampa and hasta kampa can be treated with recipes like Dwitya masha

taila and maha masha taila. Vangasena samhita He explained vepathu as sarvanga kampa under vatavyadhi. Prime importance given regarding the treatment principles of kampavata, treatment like abhyanga, sweda, nasya, niruha basti, anuvasana basti, virechana and shirobasti which are useful.⁴⁵ Masha taila⁴⁶ and Mahamasha taila have been indicated in the management of hastakampa, shirakampa and gatrakampa.

Basavarajeeyam

A more detailed diagnostic approach with illustration for the first time provided by the author with explaining the symptoms of kampavata viz karapade tale kampa, dehabrhamana, nidra bhanga, ksheenamathi. He has also indicated masha taila and karpasataila for the treatment of bahukampa.

Bhaishajya Ratnavali

In this treatise the remedies like nakula taila, nakula ghrita, mahamasha taila, vijayabhairava taila and sarvanaga kampari rasa etc have been recommended for kampavata.

HISTORICAL BACKGROUND OF PARKINSON'S DISEASE

James Parkinson was born on April 11, 1755, to John and Mary Parkinson.

They resided at number 1 Hoxton Square in the Parish of St. Leonards of Shoreditch, Middlesex County, where Parkinson lived his entire life. He qualified as a surgeon in 1784 at the age of 29 Parkinson published his medical classic *An Essay on the Shaking Palsy* in 1817 at the age of 62. This was a comprehensive treatise containing 5 chapters and 66 pages on the subject (which he called "paralysis agitans"). The review includes his experience with 6 patients.

Definition of Parkinson's disease

Marsden (1994) has defined Parkinson's disease as "a clinical syndrome dominated by a disorder of movement consisting of tremor at rest, rigidity, elements of bradykinesia, postural and gait abnormalities associated with a distinctive pathology, consisting of degeneration of pigmented brain stem nuclei including the dopaminergic substantia nigra, pars compacta, with the presence of Lewy bodies in the remaining cells."

Synonyms of Parkinson's disease

Synonyms used in contemporary science for Parkinson's disease are as follows.

Shaking Palsy – In 1817, James Parkinson an English Physician for the first time explained this disease as shaking palsy.

Paralysis Agitans – To Parkinson's disease Marshal Hall in 1841 gave the name

Paralysis agitans which is a Latin translation of term shaking palsy.

THE NERVOUS SYSTEM

is the most complicated and highly organized of the various systems which make up the human body, it is the mechanism concerned with the correlation and integration of various bodily processes, the reactions and adjustments of the organism to its environment.

Parkinson's disease is a progressive motor disorder resulting from the selective death of a very tiny group of neurons in the brain called the substantia nigra. These neurons may be few in number, but they do something very important. They secrete a neurotransmitter called dopamine into a part of the brain called the basal ganglia. Lesions of corpus striatum in basal ganglia cause Parkinson's disease because the basal ganglia work kind of like a switch that is involved in choosing to initiate motion. When brain is considering initiation of motion, a signal goes to the basal ganglia. The basal ganglia make a computation, and then a signal is sent back either encouraging or discouraging the activation of that motion, so the concept of basal ganglia as follows.

The basal nuclei are subcortical intracerebral masses of grey matter forming important parts of the extrapyramidal system. Ganglia are the collection of neurons in the peripheral nervous system. The structures that comprise "Basal ganglia" are neurons within the central nervous system.

Concept of Vatavyadhi

The word vata is derived from the verb va which means movement. The biological element vata is derived from the combination of space and vayu. The biological actions of vata is it controls the movement of molecules, cells as well as the body and division of cells, it is responsible for the organization of all the tissues of body. By bringing together kapha molecules and cells, it helps in regeneration and conjugation of tissues. By stimulating movement and activity it increases the catabolism of the body. By controlling the speed of action, it controls the metabolic process in the body. It is the leader among the tridoshas. It is responsible for origin, maintenance and destruction of life. Strength and life depends on vata..

Kampa – Tremor

Kampa is a cardinal symptom of Kampavata. Increased movements are denoted as Vepathu, Kampa, Spandana, Sphurana etc as mentioned in Ayurvedic texts. Vepathu or Kampa is enumerated in Vata nanatmaja vikara.¹⁰⁴ Kampana is Chalana (increased movement) of any part, Spandana is shaking of mild degree, Sphurana is continuous or repeated shaking. Kampa is also symptom of many diseases like Jarashosha, Urustambha, Vatika Visarpa, Madatyaya Vatika Jwara. Madahvakara explained kampa as separate disease which manifested all over the body and head. Acharya Basavarajeeyam opines in kampavata the chief manifestations are karapadatale kampa (tremors in hands and legs) respectively. To understand regarding tremors Acharya Charaka in

Kiyanthashirasiya adhaya explains the cause for veapana in body due to diminution of kapha and pitta with increase of vata which causes trembling of body. Acharya Vagbhat opines Kampa as a symptom of Provoked Vata. 112 As Vyana Vata is responsible for all the movements in the body, disturbance in the normal functioning will lead to kampa which signifies vyana vata vikruti will lead to Kampa, with Chala guna vriddhi of Vata is seen in increased movements. Explanation of kampa depending upon the site is explained by acharyas. Charaka while explaining disease of head opines tremors in head is disorder caused due to vikruta vata. Sushruta mentions as symptom of ar dita Bhela mentions shiro basti is best remedy for shirah kampa. Hasta kampa is an another type of kampa where Charaka has enlisted this in demerits of basti given with hasta kampana.

Stambha (Rigidity)

The term Stambha is originated from masculine gender and Stambha + Ach means to fix firmly/stiff Stambha means to make stiff or rigid. Stambha is a sign of Snayu prapta Vata. Charaka explains disorders of Snayu produce Stambha. Hemadri noted Stambha as inactivity.

Chestasanga –

Bradykinesia As the word chesta signifies to move and sanga means obstruction combining both words makes reduced movements or obstructed movements. Vyana vayu actually carries out all the movements. Disturbance in the function of Vyana vayu leads to Chestasanga. Bradykinesia is defined as slowness or poverty of movement with loss of automatic stereotyped movements.

Flexed Posture – Avanamana

Avanama means to bow, to bend down. Acharya Vagbhata mentioned avanamana as a sign of aging with Vata being the dominant dosha in old age and ruksha guna of Vata is particularly important in this respect. Prana is particularly important in maintenance of balance and posture. Patients with Parkinson's disease develop a characteristic flexed posture resulting especially from flexion of the knees and hands. The posture of Parkinson's disease patient involves flexion of the head, trunk and extremities.

Gait Abnormalities – Gatisanga

The word 'Gati' is used for gait and related movements. T Monotonous Speech – Vak vikriti Vak is the function of udana vayu. Rooksha guna of vata is responsible for obstructed low, dry, and broken voice. Disturbance in functions of Prana and Udana may interfere with fluency of speech. Avarana of Udana by Kapha manifests with symptom of vaksawara graha as mentioned by charaka he term 'Gati' originates from 'Gam' meaning to move, to go. 135 Gati is a function of vyana vayu. In Kampavata the functions of vyana vayu are impeded resulting in characteristic gatisanga. Avarana of Vyana, Udana and Prana by Kapha manifest with symptom of restricted movements.

Nidrabhanga – Insomnia

Here nidra is sleep and bhanga means disturbance. So Nidrabhanga defined as disturbed sleep. Disturbed sleep or Nidrabhanga is a symptom of aggravated Vata. Staying asleep or Insomnia can result from anxiety or depression.

Ksheenamati – Dementia

Buddhi determines the things by shifting out and distilling bad and good probabilities respectively. Buddhi takes rational decision by choosing right objectives Chakrapani Pranavayu supports Buddhi Udana is related with Dhi(Buddhi) and Manobhodhana.

Impairment in Memory – Smritihani

Smriti is ability to remember the things already seen or heard or experienced. Smriti is dominating function of udana vayu. so smritihani is result of impairment in function of udana vayu. Some patients of Parkinson's disease suffer significantly with memory loss. The exact cause for this is not known.

Samprapti'

means the complete procedure of manifestation of diseases. Samprapti is most vital in understanding of the disease and its management as goal of therapy is to contravene samprapti. Because samprapti explains the development of morbid conditions more specifically the doshic events and the reaction of other pathologic factors occurring in the disease. Samprapti of vatavyadhi is complex process to understand. Acharya Madhava while stating the 'vatavyadhi' has explained "vikruta vatajanito asadharano vyadhihi vatavyadhi,"¹⁵¹ vatavyadhi is manifested due to vikruta vata and is asadharana in nature. Though Kampa is mentioned under the heading of vataja nanatmaja vikaras, samprapti for Kampavata is not explained separately, so the general samprapti of vatavyadhi can be considered here.

Illustration No.1 Samanya Samprapti of vatavyadhi

According to Acharya Charaka and Acharya Vagbhata
Nidana sevana

Vata prokopa

Vitiated vata travels through the body

Settles in riktha srotas

Further vitiation of srotas

Vata vayadhi

Samprapti Ghataka

Dosha : Vata (Prana, Udana, Vyana)

Dushya : Mastulunga majja, Snayu

Srotas : Vatavaha

Srotodushti : Atipravritti

Udbhavasthana : Pakvashaya

Adhishtana : Mastishka

Sancharasthana : Rasayani

Vyaktasthana : Sarvashareera

Vyadhi Marga : Madhyama .

Patho Physiology of Parkinson's disease

Hallmarks of the Pathology of Parkinson's disease are 1

Degeneration of Substantia nigra. Loss of at least 60% of dopaminergic neurons. Presence of lewy bodies in surviving neurons of the Substantia nigra. Parkinson's disease results from degeneration of the dopaminergic pathway from the substantia nigra to the corpus striatum. Voluntary movement is controlled by the basal ganglia, which are a group of sub cortical nuclei consisting of the Striatum (caudate and putamen), Globus pallidus (externa and interna), Substantia nigra (pars compacta and reticularis) subthalamic nucleus. Showing the Pathology of Parkinson's disease Substantia nigra and Lewy bodies in Parkinson's disease patient
 Degeneration of substantia nigra
 Loss of Dopaminergic neurons, Lewy bodies
 Deficiency of Dopamine
 Abnormal movements, impaired balance and posture

PARKINSON'S DISEASE

Investigations

There are no laboratory biomarkers for Parkinson's disease. Serum ceruloplasmin concentration is obtained as screening test for Wilson's disease. It should be obtained in patient who present with Parkinsonian symptom under age of 40 yrs. As yet, there is no simple test that enables confirmation of an accurate diagnosis of Parkinson's disease. However, a number of techniques and forms of brain imaging may be used, mainly in specialist centres to assist in diagnosis. Imaging techniques have been developed over the years and have contributed much to the current knowledge of the pathophysiology of Parkinson's disease. As research tools they have been valuable and on occasions provide useful techniques for helping with the task of diagnosis. Computerised tomography (CT) scans appear normal in Parkinson's disease, but may show areas of atrophy in MSA (multi system atrophy). The main value of performing a CT scan is in excluding other conditions such as hydrocephalus, or small strokes as evidenced by areas of tissue damage. Magnetic resonance imaging (MRI) scans have a higher resolution and can be valuable in assisting the diagnosis of MSA. Positron emission tomography (PET) scans are able to give an idea of cell functioning, whereas CT and MRI scans show structural changes that may be present in the brain. PET scans enable uptake of dopamine by the dopaminergic neurons of the nigrostriatal pathway to be measured. A positron-emitting radioactive marker is administered to the patient, such as 18F-6-fluorodopa (18F-dopa). When taken up by presynaptic dopaminergic neurons in the caudate and putamen (corpus striatum) it is metabolised to 18F-dopamine. Emission of positrons by the isotope enables tissue concentrations to be measured. At present, PET scans are mainly used in research and at specialist Centres. Single photon emission computed tomography (SPECT) scans (also known as Dat scans) are cheaper to carry out and are more readily available in hospitals. Derivatives of cocaine, 123I-CIT and 123I-FP-CIT, are most frequently used with gamma-ray emitting isotope

SPECT. These target presynaptic dopamine reuptake sites. The gamma-ray-emitting isotope enables visualisation of uptake in the caudate and putamen, which is reduced in Parkinson's disease.

SADHYASADHYATA

After diagnosing a disease with the help of nidana panchaka, before starting the treatment, it is necessary to consider the prognosis, which helps in adopting the proper treatment. Most of our acharyas consider shuddha vataja vyadhi are asadhya or krichrasadhya. So Kampavata being one of the shuddha vata vyadhi, is also krichrasadhya / asadhya for chikitsa. Parkinson's disease is a progressive disorder but its rate of progression is variable. The exact prognosis for an individual patient is difficult to predict precisely. Many factors may influence the prognosis of Parkinson's disease, such as age of onset, early clinical pattern and response to the treatment.

CHIKITSA

In Ayurveda Aushadha is considered as one of the four fold constituents of chikitsa –chatuspada and which has been placed next to the physician. The drug is 'an agent' which a physician employs as an instrument in restoring the equilibrium of the body tissues. In modern ages WHO stresses importance of drug and defines it as a substance or product that is used or intended to be used to modify or explore physiological system or pathological status for the benefit of the recipient. Acharya Charaka has further amplified the scope of Chikitsa by saying, chikitsa not only aims at the radical removal of causative factors of the disease but aims at the restoration of doshic equilibrium.¹⁵⁸

Kampavata being one of the Vatavyadhi, general line of treatment which is explained for vatavyadhi can be adopted by considering specific etiology.

For better understanding these principles of treatment are explained under 3 headings.

- Shodhana
- Shamana
- Other Measures

Acharya Vangasena has described specific therapies for the treatment of Kampavata. These specific line of treatment for Kampavata can be summarized here.

Abhyanga
 Swedana
 Virechana
 Anuvasana basti
 Niruha basti
 Shirobasti

PATHYAPATHYA

That which is congenial to the srotas or body is called as pathya, contrary to these are considered as apathya.¹⁶⁹ Pathyapathya play important role in multifunctional effects by helping in avoidance of nidanas relieving the khavaigunya and checking the pathogenesis. There are

no particular pathya and apathyas mentioned for Kampavata.

Hence pathyas and apathyas of general vatavyadhi can be considered.

| Ahara | Pathya | apathya |
|---------------|-------------------------------------|-------------------------|
| Rasa Varga | Madhura, Amla, Lavan | Katu, Tikta, Kashya |
| Shooka dhanya | Godhuma, Raktashali, Shashtikashali | Chanaka |
| Harita shakha | Patol. Shigaru, vartaka | |
| Phala | Dadima, jambeera, drakasha | Tinduka, Udumbara |
| Mamsa Varga | Chataka Kukkuta Tittira | All jangala mamsa varga |
| Ksheera varga | Godugda Ajadugda Dadhi | Gardhabha |
| Jala varga | Ushnajala Shrutasheetajala | Sheetambu Tadajala |

Tri guna rasa

Parada

Parada is the most important and foremost ingredient of compounds of Rasashastra, without which the science of Alchemy – Rasashastra perhaps would not have existed. Rasa Panchaka of Parada.

Rasa – Shadrasa Veerya – Ushna

Guna – Snigdha, sara Vipaka – Madhura

Karma – Yogavahi, Rasayana, ativrishya, balya, vajkara, vayastambhakara,

dehasiddhakara, lohasiddhakara, khe-gatiprada, purushartha chatusthaya- prada, Ayushkara, Bhukti-mukti-prada, dristi-bala-prada, krimighna, Ropana, Shodhan, Agnivardhak, Pushtikara etc.

Doshagnata – Tridosahara,

Rogagnata – Tapatrya janyaroga, papaja roga, krimi, vataroga, Akshiroga, sarvarogahara especially ‘sarvakushta nut

Gandhaka

The importance of Gandhaka is due to the basic concept that Parada only with Gandhak becomes highly potent and gains qualities to destroy diseases, old age and death, which is the main purpose of Rasashastra. Rasapanchaka.

Rasa – Katu Vipaka – Katu

Guna – Teekshna Veerya – Ushna

Karma of Gandhak –

Karma – Agni-deepak, Ama-pachaka, Kleda-shoshaka, Visha-nashak, soota-veeryaprada, Ati-rasayan etc.

Doshagnata – Vata and Kapha-hara, Pitta-varadhaka

Rogagnata – Kushtaghna, Kandughna, visarpa-hara, Dadru-nashana, Krimi-hara etc.

Kajjali

Kajjali is the basic compound of all Rasaushadhis. Kajjali is a type of moorchita parada. Shuddha parad and Shuddha Gandhak or any metal are triturated continuously without adding any liquid till a nischandra (lusterless) black coloured fine powder is obtained. In Bhavaprakasha, the time of triturating kajjali is told as, till it attains the nishchandra and till black coloured powder is formed i.e. till parada is not seen it must be triturated, which means that until Parada is mixed completely with Gandhak.

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