Journal of Ayurveda & Holistic Medicine

www.jahm.co.in

eISSN-2321-1563

REVIEW ARTICLE OPEN ACCESS

CLINICAL IMPORTANCE OF MUTRA PARIKSHA

LALIT TIWARI[1]

ABSTRACT:

Complete examination of the patient is necessary before starting any treatment. For examination of patient there are various methods are described namely *Dwidha Pariksha, Trividha Pariksha, Chaturvidha Pariksha, Sadvidha Pariksha, Dashvidha Pariksha*. In Yogratnakar there is description of *Asthavidha Pariksha* namely *Nadi Pariksha* (Pulse examination), *Mutra Parkisha* (Urine examination), *Mala Pariksha* (Stool examination) *Jihwa Pariksha* (Tongue examintion),*Sabad Pariksha* (Voice examination), *Sparsh Pariksha* (Examination by touch), *Drik Pariksha* (Eye examination), *Akriti Pariksha* (General appearance of body). *Mutra Parkisha* (Urine examination) is the ancient Ayurvedic practice of analyzing urine to diagnose and understand an individual's health condition. Ayurveda emphasizes the importance of urine examination as it is believed to be a reflection of the metabolic activities and physiological functioning of the body. According to Ayurveda, urine examination can reveal the imbalance of doshas the presence of toxins and the overall health status of an individual. *Mutra Parkisha*(Urine examination) is a non-invasive and cost effective diagnostic tool that offers valuable insights into an individual's health status. In Ayurveda physical examination of urine is described. In modern medical science the examination of urine includes physical, chemical and microscopic examination. In this review article clinical importance of urine is described.

Key words- *Mutra Parkisha, Urine, Pariksha*

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INTRODUCTION

It is necessary to examine the patient properly before starting any treatment. For examination of patient there are various methods are described namely *Dwidha Pariksha, Trividha Pariksha, Chaturvidha Pariksha, Sadvidha Pariksha, Dashvidha Pariksha*. In Yogratnakar there is description of *Asthavidha Pariksha* namely *Nadi Pariksha*(Pulse examination)*, Mutra Parkisha* (Urine examination)*, Mala Pariksha*(Stool examination) *Jihwa Pariksha* (Tongue examintion),*Sabad Pariksha*(Voice examination),*Sparsh Pariksha*(Examination by touch)*, Drik Pariksha* (Eye examination)*, Akriti Pariksha*(General appearance of body). *Mutra Parkisha*(Urine examination) is the ancient Ayurvedic practice of analyzing urine to diagnose and understand an individual's health condition. Ayurveda emphasizes the importance of urine examination as it is believed to be a reflection of the metabolic activities and physiological functioning of the body. According to Ayurveda, urine examination can reveal the imbalance of doshas the presence of toxins and the overall health status of an individual. *Mutra Parkisha*(Urine examination) is a non invasive and cost effective diagnostic tool that offers valuable insights into an individual's health status. In Ayurveda physical examination of urine is described . In modern medical science the examination of urine include physical, chemical and microscopic examination. In this review article clinical importance of urine is described.

Mutra Pramana [1,2]

Normal *Pramana of mutra* is four *Anjali.*The *Pramana* is increased in *Prameha,*(Diabetes),*Pittaja Arsha,*(Haemorrhoids) *Ashmari,*(Renal Calculi) *Pittavriddhi, Sannipata jawa and Nava Jwar* (Acute fever)

The *Pramana* is decreased in *Atisara,*(Dysentry) *Muta kshaya,*(Anuria) *Vishuchika,*(Cholera) *Udara roga* And *Vata Kundalika.*

Color of Urine

Yogratnakar stated that examination the urine, gives an idea about the sign of disease. Urine examination not only helpful in diagnosis of disease but also helpful in prognosis of disease.

Normally it is *Avivarnam* i.e. not having pathological color. It refers to normal yellow color of urine [3](Ka. Su.28)

Table 1: Color of Urine [4,5]

Color of Urine	***Dosha* Involvement/ Disease**
Pandu varna	*Vata*
Red	*Pitta*

Frothy	*Kapha*
Mixed colour	*Dawandaj*
Black	*Sanniapataja*
Krishna	*Vataja Gulma, Arsh, Pandu, Udara*
Aruna	*Vataja Jwara, gulma, Arsha, Pandu*
Peeta	*Pittaja jawaa, Rakta Pitta, Pittaja Gulma*
Gomed	*ashmari Lakshana,MutraSada*
Harita	*Pittaja Jwara, rakt Pitta Purvarupa, Pittaja Gulma etc.*
Bhasmodaka	*Ashmari Lakshna, Mutra Shukra*

Clarity

Normal Urine is clear.[6]

Table 2: Significance of Clarity of Urine

Transparency/ Consistency	**Disease**
Clear Like Water	*Udakmeha*
Like semen	*Shukra Meha*
Like Marrow	*Majjameha*
Liked Ghee	*Jalodara*
Clear above and turbid below	*Surameha*
Turbid overnight	*Sandrameha*

Odor

Table 3: Odor of Urine[7]

Odour	**Disease**
Vishra Gandha	*Pittaja Arsha*
Vasta Gandha	*Purvarupa of Ashmari*
Vid tulya Gandha	*Mutraghata*
Gandha rahita	*Udakmeha*

Amagandhi	*Manjistha Meha*

Only Acharya Kashyapa has mentioned about normal *Gandha*(Odour) of urine. According to him, normally urine is *Natigandhi* ie.an odour which is not irritating.[8]

Rasa (Taste)

According to Charak and Sushruta, Rasa of normal urine is *Katu* and *Lavana* and according to Acharya Harits it is *Kshara, Katu and Madhura.*[9]

***Sparsh*(Touch)**

Ushna (when freshly passes, it is slightly warm), *Tikshan Guna* (can be attributed to *Agneya* predominance) [10] .

***Ghanatwa*(Density)**

Normal urine is *Drava* (liquid), *Sara*(with low density) and *Laghu* (Light).[11]

***Tail Bindu Pariksha* (Oil drop Examination) of Urine**

S.O.P. for *Tail Bindu Pariksha*

Time of Urine Collection

Various texts as Yogaratnakara, Vangasenasamhita, Hansaraja Nidan, Vasavarajiyam etc, have described the early morning time for the performance of *Taila Bindu Pariksha* describing it by various names- *Suryodaye, Prabhate, Suryatape, Bhaskaro Udaye Bela* etc

Yogratnakara and Vangsena stated that the ideal time for collection of urine should be 4 *gahtikas* are left in last *yama* of night. In a day there is eight *yama* and in one *yama* there are three hours. According to Monier William's dictionary and adopted by Ayurvedic pharmacopoeia of India *ghatikas* is equivalent to 24 minutes. Four *Ghatikas* on calculation come around 1 hr 36 min. From the calculation, it is clear that time of collection is 1 h 36 min before sunrise.[12]

***Patra* (Container)for collection of Urine**

In Ayurvedic texts use of glass container is instructed for collection of urine . Vangsena stated that either glass or bronze vessel should be used for collection of urine.[13]

Collection of mid stream urine

The mid stream urine should be collected for examination of urine.

The Oil

In Ayurvedic texts mainly term *tail*(Oil) is used for examination of urine. According to Acharya Sharangdhar when no clear description is given then *til tail* should be taken.

Size of drop

According to Ayurvedic texts *Trina* should be used to drop the oil drop over the surface of urine. According to study conducted by Dr. Reetu Sharma et al, 2009 BHU, the average volume of one drop comes to be around 12µl.

Procedure

With the help of Trina (dropper)/micropipette instill a drop of urine in glass container,

maximum height of 1 cm from the urine surface.

Observation

Observe the shape, direction of spread, direction of spread of oil drop.

Inference

Table 4: Oil drop appearance according to *dosha* involvement[14]

Oil drop Appearance	***Dosha***
Like Snake	*Vata*
Like Umbrella	*Pitta*
Like Pearl	*Kapha*
Tail bindu take *Chalini* (Sieve) shape	*Kuladosha*
Tail bindu take *Narakaram* (Human being)	*Bhutdosha*

Direction of Spread of Oil Drop

If *Tail Bindu* spreads to East direction than disease will be cure very soon. If it spread in South direction than patient will suffering from fever and patient will take long time to recover, If it spread North direction the patient will definitely recover and if it spread to west direction the patient will recover and achieve happiness. If it spread in *Ishan* direction, patient will die within one month. If it spread in *Aagneya* and *Nairtya* direction, patient's death is certain. If it spread in *Vayavya* direction, patient will die soon.

Table 5: Prognosis of disease on the basis of spread of oil drop

Behavior of Oil Drop	**Prognosis of Disease**
If oil drop spreads fast over urine	*Sadhya* (Good Prognosis)
If oil drop spreads very slowly	*Krichasadhya*(Difficult to treat)
If oil drop settles down in the bottom of pot	*Asadhya* (Bad Prognosis)

Table 6 : Diagnosis of disease on the basis of appearance of urine [15]

Color of urine	**Diagnosis**
White urine like flour	*Shuklameha*
Looks like seminal fluid	*Sukrameha*
Sweta *Sandra*	*Mutroksada*
Like *Kshar*	*Ksharmeha*
Like *masi*(black in colour)	*Kalameha*
Like feather of Indian roller	*Nilmeha*
Like colour of blood	*Raktameha*
Decoctionof *Manjistha*	*Manjisthameha*
Like colour of turmeric water	*Haridrameha*

Pandu Varna	*Madhumeha*
Rakat Pitta	*Kamla, Usnavata*
Krishna Pitta	*Kumbha Kamla*
Rakta	*Pittaja mutrakricha*

Table 7: Diagnosis of disease on the basis of character of urine

Character of Urine	**Diagnosis**
Prabhut Avil Mutrata	*Prameha*
Picha Mutra	*Kaphaja Mutrakricha*
Tantubadh, Pichil	*Alalameha*
Bindu Bindu Sarvati	*Bastikundal*

Table 8: Shape related to *Sadhya* conditions (Good Prognosis) [16]

Shape	**Means**	**References**
Hansa	A goose, gander(male goose), swan, flamingo	Yogratnakr, Vangsena Samhita, Yog Tarangini
Karanda	A basket of bamboo wicker work, honey comb, a sort of duck	Yogratnakara, Yog Tarangini
Tadaga	A tank,pool	Yogratnakara, Yog Tarangini, Vangsena, Hansraja Nidana
Kamal	Lotus	Yogratnakara, Yog Tarangini
Gaja	Elephant or a mound of earth sloping can be taken	Yogratnakara, Yog Tarangini, Vasavarajiyam
Chamara	Belonging to Chowrie, Chowrie means a kind of plume on the heads of horses	Yogratnakara, Yog Tarangini, Vasavarajiyam
Tarana	An arch, arched doorway, festooned decorations over doorways, a triangle supporting a large balance	Yogratnakara, Yog Tarangini, Vasavarajiyam

Harmya	A large house, palace, mansion, any house or building or residence of a wealthy person	Yogratnakara Yog Tarangini
Parvat	Taken as mountain or any shape which looks like mountain	Vasavarajiyam
Vriksha	A tree any tree bearing visible flowers and fruits	Vasavarajiyam
Matsya	Fish	Vasavarajiyam

Table 9: Shape related to *Asadhya* Condition [17]

Shapes	**Means**	**References**
Hala	A plough, it has a long wooden end with cured metal blade on one end	Yogratnakar, Vasavarajiyam, Vangsen Samhita
Kurma	A tortoise, turtle	Yogratnakar, Vasavarajiyam,Yogtarangini, Vangsen Samhita
Sairibha	Buffalo	Yogratnakar, Vasavarajiyam,Yogtarangini
Sira vihina nara	To man without head	Yogratnakar, Vasavarajiyam,Yogtarangini
Gatra Khanda	Refer to a part of body or a limb	Yogratnakar, Vasavarajiyam,Yogtarangini
Sastra	Knife, dagger, it is indicative of weapon used for cutting or wounding	Yogratnakar, Vasavarajiyam,Yogtarangini
Khadaga	A sword,a long weapon	Yogratnakar, Vasavarajiyam,Yogtarangini,

		Hansaraj Nidan
Musala	A pestle (especially) a wooden pestle used for cleaning rice	Yogratnakar, Vasavarajiyam,Yogtarangini
Pattisa	A spear with a sharp edge or some other weapon with three point	Yogratnakar, Vasavarajiyam,Yogtarangini
Sara	A sort of reed or grass, an arrow	Yogratnakar, Vasavarajiyam,Yogtarangini
Laduda	A stick, staff, club	Yogratnakar, Vasavarajiyam,Yogtarangini
Trichatushpath	A way,path,road	Yogratnakar, Vasavarajiyam,Yogtarangini
Khara	Hard, harsh, rough, sharp, pungent, a donkey, a throny plant	Vangsen, Vasvarajiyam
Vrishchika	A scorpion, a caterpillar covered with bristles	Vasvarajiyam, Hansraj Nidan

Table 10: Another Shape related to Asadhya condition according to Hansraja Nidana and Vasavarajiyam [18]

Hansraja Nidana	**Vasavarajiyam**
Ksura,Danda, Kodanda, Tunira, Gada, Chakra, Vikritakriti, Bheri, Dundumbhi, Shankha, Gomukha, Turi, Mridanga and Vina etc	*Dhanusa, Srngala, Sarpa, marjar, Vyaghra, Markata, Singha, vanara, Vidala, Nagavallidala, Kumbha, Hasti balaka, Vrisha, Manava and Manduka etc*

Table 11: Relation between physical appearance of urine with the disease [19]

Appearance of urine	**Disease**
Lemon juice, sandle water, rice water	Indigestion
Smoke and excessive urine	Acute fever

Blood and yellowish colour	Chronic fever
Smoky, watery and hot	In *Vata- Pitta* fever
Whitish and mixed with air bubble	In *Vata- Kapha* fever
Polluted and mixed with blood	In *Kapha-Pitta* fever
Mixed shades depending on the *dosha* involvement	In *Sannipataja* fever
Manjistha colour, smoky, watery, cool, like root of *chitraka*	Physical disease

PREVIOUS RESEARCH WORK ON *MUTRA PARKISHA*(URINE EXAMINATION)

A study on the method of *Taila Bindu Pariksha* (oil drop test)[20]

Anukul C. Kar, Reetu Sharma, Bimal K. Panda, and Virendra P. Singh

Standardization of method of *Taila Bindu Pariksha*

In standardization of the procedure, it was planned to standardize the following variables of *Taila Bindu Pariksha*.

- Shape and size of *Patra* (testing containers)
- Volume of the urine
- Size of the oil drop
- Height of the oil drop from the surface of urine
- Duration between collection and performance of test
- Type of *Tila Taila* for test
    - Parameters observed during *Taila Bindu Pariksha*
- Shape of oil after spread
- Direction of spread
- Spread time and spilt time
- Area covered

Standardization of the above variables was done on apparently healthy volunteers of either sex between 20 and 30 years of age with no drug history at least for 1 week and those having similar diet pattern on previous day of the test. Urine routine and microscopic examination was done and cases with any abnormality were discarded for the present study. Video recording of the whole procedure was done to provide evidence.

The difference in constituents of urine depends upon the dietary metabolites and other minor constituents which are excreted through urine. Presuming the interference of the dietary metabolites with the behaviour of oil drop in urine, apparently healthy volunteers who stayed in the hostel were selected as the hostellers have fixed menu in the diet. For standardization, the test should be performed in constant parameters, so it

was planned that one parameter will be changed at a time and any difference in the observations will be noted down. For getting finalized standard parameters, the following parameters were taken for the study.

Material of Patra (testing container) Almost all Ayurvedic texts have instructed to use glass container for *Taila Bindu Pariksha* except *Vangasena* who has stated that either glass or bronze can be taken. Glass was chosen as standard in the current work on the basis that cleaning and availability of glass vessel is easier and glass is cheaper than bronze.

Shape of Patra

Test was performed in square and round shaped vessels of the same dimensions and observations were noted down.

Size of drop

In Ayurvedic literature, *Trina* was used as oil dropping media over urine surface. Average weight of oil drop was calculated and then volume of one drop was determined by following formula:

Volume of one oil drop = average weight of one oil drop/density of oil.

Volume of urine

Test was performed after thorough mixing of urine sample using different volumes of the same sample, keeping the other parameters constant. Volume of urine sample was changed each time. Test was performed using 200 ml, whole voided sample, and the amount which covered at least three-fourths of the testing container.

Size of testing container

Keeping other parameters constant, *Taila Bindu Pariksha* was done by dividing the same urine sample and putting it in different sizes of testing containers having 4 inch, 6 inch, and 8 inch diameter.

Height of the oil drop from the surface of urine

This was done by dropping the oil from the height of 10 cm, 5 cm, and 1 cm from the surface of urine.

Time of Taila Bindu Pariksha

Time factor (i.e., time between collection of urine sample and performance of test) was another variable for standardization. For this, recording of observations of the same urine sample was done immediately after collection, at a time gap of 2 h after collection, and at a time gap of 5 h after collection.

Variety of sesame oil

For selection of oil, urine sample was divided into three parts and *Taila Bindu Pariksha* was performed by oil of white series (W_1, W_2, and W_3) and black series (B_1, B_2, and B_3) one by one.

Discussion

Material of testing container

As minute traces of lipid or any surface active molecules that can affect the spread of oil film can be easily removed from a glass vessel and

as glass can be washed with very strong acid or alkali, glass vessel was preferred over bronze. Secondly, glass vessel is cheaper than bronze and also its easy availability justifies its preference as the material of testing container.

Shape of testing container

In this study, it was observed that shape of testing container does not affect the spread of oil drop. As availability of round vessel was easier, it was chosen as the standard for this study.

Volume of urine

The observations were almost the same in the three volumes tried, i.e., 200 ml, amount which covers three-fourths of the Petri dish, and whole voided sample. It was decided that whole voided sample will be taken on the basis that the above condition will provide a chance to have the maximum number of surface active molecules and so accurate observations can be obtained even if the number of surface active molecules is less.

Size of Petri dish

Petri dishes of 4 inch, 6 inch, and 8 inch diameter were tried. The shape in all Petri dishes was the same, but differences in spread time, split time, and area were observed. Presence of surface active molecules over which oil cannot spread is expected to restrict the extent of spread depending on the quantity of such molecules, and therefore in smaller dishes, the diameter of the spread will be less. This was demonstrated in the experiment with different sizes of the Petri dishes. Due to small area, probability of missing details of oil margin became more. Petri dish of 8 inch provided minute details of shape as well as comfortable spread and split time. So, it was chosen as the standard container for this study.

Height of the oil drop from the surface of urine

Heights tried were 1 cm, 5 cm, and 10 cm. As stated in the observations, in the latter two heights, waves were produced. For proper observation of shape, it was necessary that urine surface should be calm and quiet, so height of 1 cm was chosen where no waves were observed. Hence, this height was set as the maximum standard height from which oil would be dropped.

Time of Taila Bindu Pariksha

Spread was slow when just voided sample was used; and when sample kept for 5 h was used, spread was very fast. Immediately after voiding, value of surface tension of urine was maximum which decreased with time. This might be the reason of slow spread in the starting. Later on, changes occur due to bacterial decomposition of urine constituents, so spread occurs faster. The spread was neither fast nor slow when the test was performed on the samples within 2 h of collection. As said in the texts that the sample should be collected before 4 Ghatika of sunrise, which on calculation comes to approximately 1 h

36 min, the test should be performed after sunrise. Since the rate of spread was neither fast nor slow when performed within 2 h of collection and it testifies the textual description, a gap of 2 h was kept as the standard between collection and performance of test.

Size of drop

The average volume of one drop came to be 12.48 µl . A round figure of 12 µl was taken as standard for this study. As it was not possible to get Trina of the same size throughout the study period, Pasteur pipette or micropipette of the same caliber was used in the study.

Variety of oil

As spread in black variety was slow in comparison to that in white variety due to more specific gravity and viscosity, it allowed sufficient time to observe the behavior of oil.

Assessment of prognostic aspects of cancer by *Taila Bindu Pariksha* [21]

Kalpana B Kachare , Anukul Chandra Kar

The aim was to evaluate the prognosis of cancer by *Taila Bindu Pariksha* and compare the results with ECOG scale. The study shows that *Taila Bindu Pariksha* may be used as an alternative method to ascertain the prognosis of the cancer patients

A study on *Tailabindu pariksha* – An ancient Ayurvedic method of urine examination as a diagnostic and prognostic tool [22]

Pavan Kumar Sangu, Vanitha Murali Kumar, Meera Shiv Shekhar, Murali Krishna Chagam, Penchala Prasad Goli, and Prasanna Kumar Tirupati

The urine collection, oil drop instillation and evaluation, were all done according to the guidelines laid down in Ayurvedic practices. The findings with respect to the patterns created by the spread of oil drop in majority of the patients matched with the description given in literature. The study was a basic step to know about the methods and techniques used in *Tailabindu pariksha*.

Study of *Taila Bindu Pariksha* On Artificial Urine[23]

Sharma Reetu, Kar A C, Panda B K

Material And Methods

To avoid regular use of normal urine, artificial urine was prepared with all major constituents of urine. It was prepared from two different methods for the study by adding various constituents which are normally present in urine. Constituents were mixed in the water and their physio-chemical properties were adjusted in the range of normal urine. Two different methods reported earlier were used for this purpose and they are briefly summarised below:-

Method One

To 1.5 litres of distilled water 36.4 g of urea was added and mixed until all the crystals dissolved. Then 15.0 g of sodium chloride, 9.0 g of potassium chloride and 9.6 g of sodium phosphate were added in the solution and was

mixed until the solution became clear. The pH was checked with indicator to ensure that the pH is within the 5 to 7 pH range. (If the solution is out of this pH range, the pH can be lowered with 1 N HCl or raised with 1 N NaOH). A urinometer was placed into the solution and specific gravity of the solution was measured. Solution was diluted with water until specific gravity range was within 1.015 to 1.025. This solution served our purpose as storage stock solution of "Normal urine solution" (This solution can be kept refrigerated for several weeks or frozen in plastic containers for months). Before use, the stock solution should be warmed to room temperature. Forthe similarity to human urine 4.0 g of creatinine and 100 mg of albumin was slowly mixed into the 2 litres of the prepared normal urine solution.

Method Two

The second method of artificial urine was adopted from article "Simple artificial urine for the growth of urinary pathogens". Artificial urine was prepared by dissolving following components as mentioned in Table no.12.

Table no. 12 Constituents of Artificial Urine

Component	Quantity (g)	Concentration (m/mol)
Peptone L37	1	
Yeast extract	0.05	
Lactic Acid	0.1	1.1
Citric Acid	0.4	2
Sodium Bicarbonate	2.1	25
Urea	10	170
Uric Acid	0.07	0.4
Creatinine	0.8	7
Calcium Chloride.2H2O	0.37	2.5
NaCl	5.2	90
Iron II sulphate.7H2O	0.0012	0.005
Magnesium sulphate. 7H2O	0.49	2
Sodium sulphate.10.H2O	3.2	10
Potassium dihydrogen Phosphate	0.95	7

Di-potassium hydrogen phosphate	1.2	7
NH4Cl	1.3	25
Distilled Water	1 L	

DISCUSSION

Spread of oil drop performed on artificial urine prepared by two different methods was different from observations in normal urine which indicates that certain constituents responsible for oil spread pattern were absent in artificial urine. All constituents normally found in urine were added while preparation of artificial urine even though spread was quite different from normal spread and so it can be postulated that spread of oil drop on urine depends upon surface active molecules and other metabolites which are present in traces and are undetectable till date. These may be substances which normally determine the spreading pattern of oil. Various shapes of oil drop have been described for poor prognosis in texts. Irregular shape may occur only if surface active molecules are expected to remain in patches letting oil spread in between such patches making the spread different from uniform and circular. Some of these minor constituents may be magnetically active and thus may align themselves to a particular pattern and direction. This may be the reason for appearance of different shapes in various clinical conditions. It may be presumed that the amount of these trace substances changes in different diseases thus causing change in spread pattern. These molecules though in very small number, may prove to be very important indicators of health and pathological state. Further study on the standardization of the measurements, their correlation with components of urine present in micro/nano levels (for example, HPLC findings of urine) in different physiological, psychological and pathological status can provide a wide and very important dimension to the scope and utility of Taila bindu pariksha.

CONCLUSION

Mutra Parkisha(Urine examination) is a traditional diagnostic technique used in Ayurveda to assess an individual health status by analyzing their urine. The practice involve physical examination of Urine. It is a valuable tool for practitioner of Ayurveda and can provide valuable insights into an individual;s health status.Mutra Prakisha tells about not only diagnosis but also prognosis of disease.

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CITE THIS ARTICLE AS

Lalit Tiwari. Clinical Importance of Mutra Pariksha. *J of Ayurveda and Hol Med (JAHM)*. 2023;11(3):100-115

Conflict of interest: None

Source of support: None