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MUTRA PAREEKSHA AND URINE ANALYSIS: A CRITICAL REVIEW

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ABSTRACT

Mutra Pareeksha is not only a diagnostic tool & also prognosis criteria of urine examination developed by the medieval Ayurvedic scholars. This article aims at, by using this ancient wisdom to diagnose the medical conditions and to predict about their prognosis, and studying about how it can be applied to modern medical practice and its limitations. In today's modern medical practices, there is a plethora of urine diagnostic examinations available. These act as an added financial burden to the patients. In the midst of this, making use of context of *Mutra Pareeksha* in Ayurveda like *Tailabindupareeksha*, *Pramehaprakarana* & *Mutrakruchra* for urine examination, will not only prove economical, but also is a time-tested and scientifically proven method. Prognosis is an important aspect of diagnosis and treatment. From ancient time predicting prognosis of a disease has always been a big challenge to the medical profession. Nowadays Patients want to have access to accurate prognostic information. Knowing prognosis plays an important role in end of-life decisions and it helps to determine whether to take certain treatment or not. If we look into *Ayurvedic* texts then we will find that art of prognosis was well developed in ancient times.

Key words: *Mutra Pareeksha*, *Tailabindu Pareeksha*, specific gravity, surface tension, viscosity, *Mutra Varna Vikruti*.

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INTRODUCTION

Investigations play a major role in diagnosis of any disease. In *Ayurveda* literature various examination methods are explained, even then we are completely depending on modern parameters due to lack of proper understanding and explanations available in our texts. *Tailabindhu Pareeksha* is one among such modality explained by *Acharyas* of medieval period. Thus, enlighten to its various aspects is essential. *Tailabindhu Pareeksha*, *Prameha Prakarana* & *Mutrakrichra* are special modality for examination of urine. The need for clinical examination and drug evaluation were of less significance in ancient period because *Acharyas* of ancient days were empowered with special sense (*Divya Drusti*). Knowledge conveyed through their texts was at brief with less explanation with reference to scientific description. Towards medieval period, as the righteous actions reduced, the *Atindriya shakti* also reduced. So, the need for new examination techniques aroused to predict the diagnosis and prognosis of a disease. As a result compared to *Bruhatrayee* more *Pareekshas* can be seen in *Laghutrayees*. *Ashtasthana Pareeksha*¹ contributed by *Yogaratanakara*, a detail description about the examination of tongue, pulse, urine, faeces and so on which convey the internal changes. As urine is the end product of all the

metabolic activities of body, out of all *Ashtasthana Pareeksha Mutra Pareeksha* was given much importance. Because it will even reflect the normal health status of the individual too. This might be the reason for describing about *Mutra Pareeksha* in detail by various texts like *Basavarajeeyam*², *Yogaratanakara*³, *Vangasena*⁴. When it reached to *Kaliyuga*, the intellect progressively reduced and changes in lifestyle had increased the occurrence of diseases. Contemporary sciences have developed a lot of objective way of laboratory and radiological examination for the diagnosis of the disease. But it is not economical friendly and always there are fear of errors and accuracy. So, there lies the need for us to enlighten the medical world with the contributions done by our *Acharyas*. To understand the variations on the basis of *Tridosha* our own system of examination is needed. Hence there is a need to evaluate the practicality of *Tailabindhu Mutra Pareeksha*⁵, *Prameha Prakarana*⁶ & *Mutrakrichra Prakarana*⁷ according to classical text so as to make it relevant in the present era and successfully prove its importance.

Review of Literature

By appearance of urine

1. Assessment of *Dosha* involvement

In *Vata Dosha* aggravated diseases, urine of the patient appears as *Pandu Varna* (whitish) or slightly *Nilam*(Bluish). In *Kapha Dosha* dominated conditions urine becomes *Phenayukta* i.e. frothy or *Snigdha*(cloudy). In *Pitta Dosha* aggravation urine appears yellowish or *Rakta Varna* (reddish). In case of *Rakta* aggravation urine become *Snigdha*, *Ushna* (hot) and resembles blood. In *Dwandaja*, i.e. a state of combined *Dosha* aggravation, mixed colours are seen in the appearance of the urine as per the *Dosha* involved in the disease causation. In *Sannipata* state urine becomes *Krishna Varna*(Dark).^{8,9}

2. Diagnosis of disease involvement¹⁰

In case of diseases related to *Ajirna* (indigestion), urine appears like *Tandulodakavat* (rice water). In *Navina Jwara* (acute fever) urine appears 'Smoky' and the affected passes more urine (*Bahu Mutrata*). In *Vata-Pitta Jwara*- urine is smoky, watery and hot. In *Vata Shlesma jwara*- urine is whitish with air bubbles. In *Shlesma-Pitta Jwara*- urine is polluted and is mixed with blood. In *Jeerna Jwara* (Chronic)urine becomes yellowish and red. In *Sannipata Jwara*-urine appears in

mixed shades depending on *Taratamatva* of *Dosha* involvement. Also, it is said that if urine is placed in a glass jar and appears reddish in the bottom - then the patient is suffering from *Atisara*(diarrhoea). If the urine has particles appearing like the droplets of ghee, it indicates *Jalodara* (Ascites). In *Amavata* (Rheumatoid arthritis), urine appears as *Vasa* (fat) or *Takra* (buttermilk). In *VatajaJwara*, urine appears reddish or *Kunkuma*(saffron) in color, and in excessive passage of stools, urine becomes yellowish.¹¹

More seriously, changes in urine color can be symptom of an underlying medical condition. Red tinged urine can indicate the presence of erythrocytes in urine. This could be the indication of Kidney stones, CKD, Cystitis etc. Reddish urine could also be a sign of lead poisoning, mercury poisoning or some medications. Cola/tea colored urine indicates the Kidney disorder (Glomerulonephritis). Dark brown/orange hued urine indicates liver & gallbladder pathologies. Greenish or cloudy urine may be the symptom of UTI¹². So, only with the help of appearance of urine many diseases can be predicted.

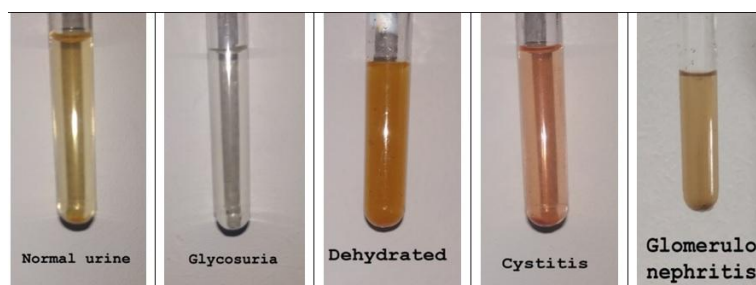


Fig: 1 Showing different colors of Urine in Various conditions

By spreading nature of the oil

If inserted oil spreads quickly over the surface of urine, that disease is *Sadhya* (curable). If the oil does not spread it is considered as *Kashtasadhya* (difficult to treat). If the dropped oil directly goes inside the urine and touches bottom of the vessel, then it is regarded as *Asadhya* (incurable)¹³. In another text. it is mentioned that if the oil does not spread and remains as a droplet in the middle of the urine the disease is considered incurable¹⁴.

Specific gravity of the urine is used to evaluate the concentrating and excretory power of the kidney¹⁵. Renal diseases tend to diminish the concentrating capability of the kidney. As a result, renal failure will be associated with urine of low specific gravity¹⁶. At this stage there is a chance of *Taila* to sink in the urine. The number of molecules, their molecular weight & size always influence the specific gravity of the urine, therefore it only approximates the solute concentration. Presence of protein increases the specific gravity of the urine¹⁷, hence oil will remain on the surface of urine. At maximal concentrations, the major solute in the normal urine do not cause any significant change in the surface tension suggesting that these solutes are less responsible for determining surface activity of urine¹⁸. Molecules which lower the surface tension become

concentrated in the surface layer. Surface tension is decreased by the presence of proteins in urine¹⁹ which helps the stability of minute drops of oil in the bulk of urine.



Fig: 2 Quick spread of Tailabindu

By spreading direction of the oil

If the oil spreads in the direction of *Purva* (east) – then the patient gets relief from the disease. If the oil spreads in the south direction, the individual will suffer from *Jwara* (fever) and gradually recovers. If the oil spreads in the northern direction, the patient will definitely be cured and become healthy. If the oil spreads towards the west, he will attain *Sukha* (happy) and *Arogya* (healthy). If the oil spreads towards the *Ishanya* (Northeast), the patient is bound to die in a month's time. Similarly, if the oil spreads into *Agneya* (Southeast) or *Nairutya* (Southwest) directions or when the instilled oil drop splits, the patient is bound to die. If the oil spreads on to *Vayavya* (Northwest) direction, he is going to die any way²⁰.

Reason for the appearance of movement can be explained by understanding

the viscosity & inertia between fluids²¹. As the fluid becomes more viscous the sluggish movement increases. But the significance of north-west, south-west direction is difficult to explain with modern parameters. This shows the ability of *Atindriya* & incalculable knowledge of our *Acharyas*.

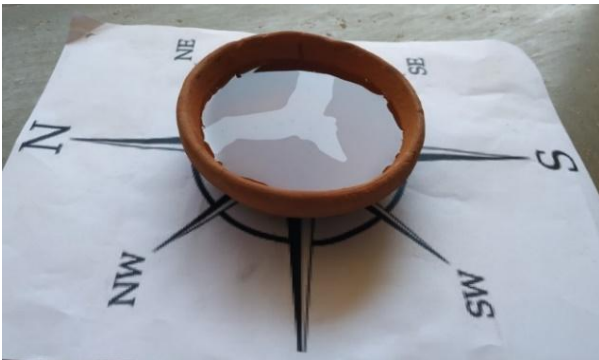


Fig: 3 North West movement of *Taila Bindu*

By spreading shapes of the oil

It is a good prognosis if the oil creates the images of *Hamsa* (swan), *Kamala* (lotus), *Chamara* (chowri composed of the tail of Yak), *Torana* (arch), *Parvata* (mountain) elephant, camel, tree, umbrella and house^{15,14}. If the *Taila* attains the shape of a fish, then the patient is free of *dosha* and the disease can be treated easily. If the drop of the *Taila* attains the shape of *Valli* (creeper), *Mrudanga* (a kind of drum), *Manushya* (human being), *Bhanda* (pot), *Chakra* (wheel) or *Mriga* (deer) then the disease is considered as the *Kashtasadhya* (difficultly curable)¹⁴. If the spreading oil creates the shapes of tortoise, buffalo, honey-bee, bird, headless human body, *Astra* (instrument used in surgery, like knife etc), *Khanda* (piece of body material) physician

should not treat that patient as that disease is incurable¹⁰. If the shape of the drop of *Taila* is seen as four legged, three legged, two legged that patient will die soon¹⁴. If the shape of the drop of *Taila* is seen in the shape of *Shastra* (sharp instruments), *Khadga* (sword), *Dhanus* (bow), *Trishulam* (type of weapon with three sharp edges), *Musalayudham* (pestle), *Shrugala* (jackal), *Sarpa* (snake), *Vrishchika* (scorpion), *Mushika* (rat), *Marjara* (cat), arrow, *Vyaghra* (tiger), *Markata* (monkey) or *Simha* (lion), then it is understood that the patient will die soon¹⁴.

The main determinant of urine surface tension is bile salt concentration¹⁸. Presence of bile salts in urine will lower the surface tension¹⁹. As Bile is an emulsifying agent²² it helps insoluble fat to slowly mix with water till it becomes a homogenous mixture. This is the reason, why oil produces different shapes on the surface of urine.



Fig:4 Chalinivat



Fig: 5 Chamara

DISCUSSION

Due to the change in the constituents of urine sample there may be variations in movement, shape of *Taila*. Hypothesis made in order to explain the basis of procedure & reason for *Taila* to show such variations in *Mutra* are as follows.

Collection of Urine

First passed early morning urine sample in empty stomach is collected as this urine will be concentrated. During day time due to consumption of fluids & food, urine may get diluted and may give false picture about the subject's health. To avoid the contamination by discharges & other particles *Madhyadhara*(Midstream) of *Mutra* is selected.

Time interval between collection and performing the Mutra Pareeksha.

As it causes the deterioration of chemical & cellular components like decrease in glucose levels due to bacterial growth, lysis of red blood cells, decomposition of casts, alkalinity increases as conversion of urea to ammonia by

action of bacteria, much gap should not be given between the collection & examination of urine. As the examination requires adequate light, so it is mentioned to perform it after the sunrise.

Selection of Trina & Taila

Selection of *Trina* is just to make a minimal quantity of *TailaBindu*. As there were no availability of dropper or micropipettes. Scientifically we can explain the selection of *Taila* here, as density of *Taila* is lesser than urine which has a composition of 93-97% of water, organic compound & dissolved ions. Further there is an interface tension between the dissimilar liquids¹⁰ and since they are non-polar molecules¹¹ the decrease in miscibility will increase the interface thickness. This will help *Taila* to produce various changes on the surface of urine. Hence this study can be taken as a basic step to explore various strategies in *Mutra Pareeksha* as per Ayurveda.

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