

A Critical study of the Physiological Concept of “Mutra Utpatt”- Ayurveda and Modern Scienceperspective

Dr. Nirmala Sharma¹, Prof.Ashok Kumar Sharma², Dr.Rekh raj Meena³

1. P.G. Scholar, Dept. of KriyaSharir M.M.M. Govt. Ayurved College Udaipur, Rajasthan

2. Professor &H.O. D, Dept. of KriyaSharir M.M.M. Govt. Ayurved College Udaipur, Rajasthan

3. Lecturer,Dept. of KriyaSharir M.M.M. Govt. Ayurved College Udaipur, Rajasthan

Date of Submission: 10-02-2025

Date of Acceptance: 20-02-2025

ABSTRACT

Ayurveda, an ancient system of medicine, places significant emphasis on understanding the physiology of the human body to maintain health and prevent disease. Ayurveda composed several principles concerning the maintenance of human health. In Ayurveda broadly explained the fundamentals of human anatomy, physiology, and pathology. Ayurveda covers anatomical and physiological perspectives on various systems, Ayurveda encompasses anatomical and physiological viewpoints regarding various systems, including the urinary system. The MutravahaSamsthana plays a crucial role in the production and excretion of mutra, or urine, and is linked to the excretory system. This article provides an overview of the physiology involved in urine formation, as addressing different Mutra pathologies requires a comprehensive understanding of urine physiology.

Ayurveda encompasses numerous aspects concerning the anatomical and physiological dimensions of the human body. A comprehensive understanding of the physiological mechanisms of various systems aids in recognizing their pathological conditions. Consequently, Ayurvedic science has a detailed description of the anatomical and physiological functions of different systems, with the urinary system being one of the key areas of focus.

Keywords:

MutravahaSamsthana, mutra, Ayurveda, Ashmari, Mutraghaat, Mutrakricchra, purish, Maldhara KalaMutravahaMoola, kitta, mutra.

I. INTRODUCTION

Ayurveda is the traditional system of life science from India, encompasses numerous aspects concerning the anatomical and physiological dimensions of the human body. A comprehensive understanding of the physiological functions of various systems is essential for recognizing their

pathological conditions. Consequently, Ayurvedic science has a detailed explanation of many systems' anatomical and physiological operations, with the urinary system being a significant focus. Numerous pathological conditions associated with the urinary system, known as Mutra Rogas, include Mutraghaat, Mutrakricchra, and Ashmari.

Effectively understanding these pathological conditions because of vikriti(roga) cannot be known without studying sarir kriya.

Urine formation is a crucial physiological function of the human body for excretions, and in it significantly plays a role in the Maldhara KalaMutravahaMoola and the waste products derived from maldravapart (semisolid part of digested food). Muta is formed by a variety of anatomical structures, including the Maldharakala and Basti. Mutravaha Sira, MutravahaDhamanis, Vrikka, MutravahaNadies, and MutravahaSrotansi. However, the current scientific knowledge suggests that the primary organs involved in the production of urine are the kidneys, ureters, urethra, nephrons, and bladder.

किं सारश्च तत्पक्वमन्त्रं सम्भवति द्विधा ।
तत्ताऽच्छं किमन्त्रस्य मूत्रं ।

पक्वामाशयमध्यस्थं पित्तं चतुर्विधमन्नपानं पचति
विवेचयति च दोषरसमूत्रपुरीषाणि ।

(सु.सू. २१/१०)

आहारस्य रसः सारः सारहीनो मल द्रवः ।

शिराभिस्तज्जलं नीतं बस्तौ मूत्रत्वमाप्नुयात् ॥

(शा.पू. ६/६)

mutra similar to purish, has been categorized as aahara mala by Ayurvedic practitioners.

The process primarily takes place in Antras, where the liquid component of Ahara is transferred to Pakvashaya following complete

digestion. It is then conveyed to Basti through the Nadi and ultimately excreted

The pitta located between the stomach and the Pakvashaya digests the four types of food after digestion digested food is divided into the two-part sara and kitta part.

तत्र अच्छकिदं अत्रस्य मूत्रं विद्यात्पनं शकृत् ।

(अ. ह. शा. ३/६१)

The Kitta transforms into Purisha, while the liquid component of Kitta is converted into Mutra. The primary organ responsible for the formation of Mutra is the from the aamashya to Pakvashaya, from where it subsequently travels to the Basti and is expelled through the Mootravahasrotasa.

The complete process takes place within the body, spanning from Amashaya to Pakvashaya. Digestion is an ongoing process that occurs continuously from aamashay to pakvashya, resulting in the continuous formation of kitta and mutra.

Homeostasis

बस्तिपूरणविकलेदकृन्मूत्रम् । (सु.सू. १५/८)

Urine replenishes the bladder as well as reduces the moisture in the body.

मूत्रस्य क्लेदवाहनम् । (अ.ह.सू. ११/५)

Referring to the functions of urine, AshtangaHridayakara has said that urine carries the clad obtained through food.

Urine is formed from the liquid form part produced as a result of food digestion. Liquid stool causes cleanness in the body. When this clenching is separated from the body, urine is formed and the settlement is filled. In this way, more than the amount of cledia in the body is excreted through urine

The urinary system regulates the body's internal equilibrium. Its primary organs—the kidneys, ureters, bladder, and urethra—cooperate to filter blood, remove waste, and regulate the balance of water and electrolytes in the body.

Function of different components in the process of urine production vrikka

In Ayurveda, the description, of the location, form and number of the kidney is found in the appropriate form, but the Acharyas have considered it related to Medodhatu and not to urine

formation.

In the above description, the interaction and relationship between the kidney, gaveini and basti becomes clear by assuming the structure of the intestine of the kidneys. The fecal fluids like urea in the urine are not formed in the kidney. Kidneys perform only filtration.

In modern medical science, the kidneys are the main component of urine excretion and blood purification.

Basti

अल्पमांसशोणितोऽभ्यन्तरतः कट्यां मूत्राशयो बस्तिर्नाम । (सु.शा. ६/३३)

Towards the inner part of the katti which is made up of small amount of flesh and blood. which is called 'basti'.

बस्तिस्तु स्थूलगुदमुष्कसेवनीशुक्रमूत्रवाहिनीनां नाडीनां मध्ये, मूत्राधारोऽम्बुवहानां सर्वस्त्रोत-सामुदधिरिवापगानां प्रतिष्ठा ।

(च.सि. ९/४)

Basti is a construct comparable to tumbi (Alabu), distinguished by its sparse flesh and blood vessel content, and is purposefully designed for the collection of mutra. Basti is also called Mootraashya, Mootradhara, Mootrabasti, Mootraputa

In modern science, the urinary bladder is a hollow, stretchy organ in the lower part of your abdomen that stores urine before it leaves your body through your urethra. So, it can be correlated with the urinary bladder

Gavini

मूत्रवहे द्वे, तयोर्मूलं बस्तिर्मै च । (सु.शा. ९/१९)

The two Gavini situated on either side of Basti are responsible for receiving urine from Antrasand circulating it through the Mutrashaya.

Mutraprashk

This refers to the urethra, specifically its penile segment. It is also known as Mutraputak, Mutramarga, and Mutrasrotas. it serves as the outlet for the Basti, measuring two angula in females and twelve angula in males. In males, it transports both Mutra and Shukra, whereas in females, it is responsible only for the passage of Mutra.

Ureter is the vessel through which urine passes after leaving in bladder.

MutravahNadi

Acharya Sushruta describes the MutravahaNaadi as being located between the Amashaya, Pakwashaya, and Basti. These channels contain thousands of minute openings that are difficult to see. Their primary function is urine filtration, known as Mutra nishyandan continuously draining urine into the Basti, and ensuring it remains moist or filled, much like rivers that flow into the ocean.

MutravahaDhamanis

The Adhogami Dhamani moves in a downward direction, aiding in the transport of Mutra and Purisha. Each of these consists of three types, leading to a total of ten, as they advance towards Mutrabasti to perform the functions of Dharana and Yapan of Mutra.

Mutravaha Siras

The details regarding this can be found in Ashtang Hridaya, where these are considered to be fine channels that transport mutra within the Basti. These Siras open on the lateral side of the Basti and continuously fill it with mutra through the process of Nishyandan.

According to modern science, The Urine formation process occurs in 3 steps or phases:

- ◆ Glomerular Filtration
- ◆ Tubular reabsorption
- ◆ Tubular secretion

◆ Glomerular Filtration

This critical process occurs in the glomerular capillaries. Glomerular filtration is the first step in urine formation and constitutes the basic physiologic function of the kidneys. It describes the process of blood filtration in the kidney, in which water, electrolytes, glucose, amino acids, and metabolic waste products are removed from the glomerular capillaries.

The glomerular filtration rate (GFR) average is 125 ml/min. In male and 105 ml/min. in female

◆ Tubular reabsorption

All substances except blood cells and proteins are pushed through the capillaries at high pressure during glomerular filtration. At the Proximal Convoluted Tubule (PCT) level, some of the filtrate substances are reabsorbed. These include sodium chloride, potassium, glucose, amino acids, bicarbonate, and other electrolytes. 99% of the filtered water is reabsorbed during the Tubular

reabsorption phase.

Absorption of some substances is passive; some substances are actively transported while others are co-transported.

Tubular Secretion

The peritubular capillaries play a crucial role in transporting reabsorbed substances back into the bloodstream, while also facilitating the active secretion of substances such as H⁺ and K⁺ ions. When there is an excess of K⁺ ions secreted into the filtrate, Na⁺ ions are actively reabsorbed to preserve the balance between sodium and potassium. Additionally, certain drugs not filtered through the glomerulus are actively secreted into the filtrate during the tubular secretion process.

II. DISCUSSION AND CONCLUSION

As per Acharya, the detailed knowledge of human physiology is helpful to understand the factors influencing our health urinary system, or MutravahaSamsthana, one of the body's most important physiological processes, urine production is necessary for the excretion of metabolic waste products and the continuous detoxification process, haemostatics, etc. which is essential to the formation and excretion of urine, is explained in detail in Ayurveda.

The Aahar Rasa produce urine after digestion and metabolism, most of the waste fluid is evacuated through the urinary system, and poor functioning of this system can cause numerous medical conditions. Major bodily parts involved in the physiological process of mutraformation are Basti, MutravahaSrotansi, Vrikka, MutravahaNadies, MutravahaDhamanis, Mutravaha Sira, and others.

The formation of urine and homeostasis are closely related to ensuring the internal balance of the organism. It balances necessary elements like water, salt, and minerals while filtering blood to remove waste, which subsequently creates urine. This intricate balancing act keeps the body's internal environment consistent, even in exogenous disturbances.

REFERENCES

- [1]. su sh 4/22
- [2]. Sharangdhar Samhita Poorva khand 6/10-11, Sharangdhar Samhita Tattva dipika Hindi, commentary by Dr. Brahamananda Tripathi, revised edition 2013.