



# **Review Article**

# AYURVEDIC APPROACH AND UPDATES RELATED TO SVEDA AND SVEDAVAHA SROTASA

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### **ABSTRACT**

Knowledge of Ayurveda is based on specific fundamental principles. *Dosha, Dhatu, Mala, Srotasa* are some among them. *Malas* are the waste products which primarily generate after digestion of food. While *Srotasa* are the channels or pathways in the human body which carries *Dosha, Dhatu, Mala* and *Mana. Sveda* (sweat) is one of the waste product which forms after digestion of food or in the process of metabolism of adipose tissue. Formation, transportation and elimination of *Sveda* is carried out by *Sveadavaha Srotasa* and it helps to regulate body temperature, maintain skin moisture and excrete toxic substance from body. Detail description of concept *Sveda, Svedavaha Srotasa*, its normal mechanism, importance in manifestation of various diseases and its application in treatment is described in Ayurvedic texts. Thinking of this fact, for better acknowledgment of these concepts and its role in the practice this comprehensive review has been done.

### INTRODUCTION

Like every other science, the wisdom of Avurveda is also framed in fundamental concepts and principles. In Ayurveda no concept is more or less important in the treatment because treatment is based on what is actually happening in the body with *Dosha*, Dhatu, Mala and which Srotasa is vitiated. So these are some of the important concepts in Avurveda. The purpose of Ayurveda is *Dhatusamya*[1] (equilibrium of body constitutions which maintain healthy state of the body). To maintain this healthy state of body, equilibrium of Dosha, Dhatu and Mala is important and *Srotasa* are the body channels which provide path for all these substances to reach there. When we use term Sveda, it means sweat in the body. The meaning of word Srotasa is body channel through which all Dosha, Dhatu, Mala are circulated. The detail description of all these channels with its clinical application is written all over in the Ayurvedic compendia. These Srotasa or channels are present in the whole body at macro and micro cell level.

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These channels are made for the transport of the vital components for the maintenance of life such *Prana*, *Udaka*, *Anna*. Food taken up converts into seven *Dhatu* (tissue) like *Rasa*, *Rakta*. These tissues in the stage of transformation are also channelized by *Srotasa*. Unwanted products of digestion, which are termed as '*Mala*' are also transported through *Srotasa*. One of the important mala is *Sveda* (sweat). It is carried out by *Svedavaha Srotasa* and excreted through *Lomakupa* (hair follicles).

The number of people facing problem of less or excessive sweating are comparatively more or increasing in the last few years. Research shows that nearly 5% of the world's population suffers from excessive sweating or hyperhidrosis [2] and no one knows exactly how many people are facing problem of less or no sweating because people may be not aware of it or may not consider it as health issue [3]. Multiple factors are responsible for these conditions and it can be considered as major problem because of its increasing nature. In day today life everyone generally ignores the abnormalities of sweat unless it affects their daily routine. Also vitiation of Sveda or Svedavaha Srotasa may leads to various pathological conditions like skin diseases, fever etc. Other than this present lifestyle like use of air-condition, spicy diet, hot drinks like tea or coffee, alcoholic beverages which causes vitiation of Srotasa may increase the chances of occurring of disease, so to avoid kinds of conditions and if they occur then to treat them well with the

Ayurveda, in-depth knowledge of Sveda and Svedavaha Srotasa is must. Although the detail description of these concepts is available in the Avurvedic text, few works have been done previously on the Sveda and Svedavaha Srotasa. These are related to physiology of sweating. its importance in process thermoregulation and its pathological study. Lots of work have been done on Svedana Karma as Chikitsa, few works have been done on concept of Ayurvedic or herbal deodorants, but detail literally review is not done yet, so this attempt is made for the understanding of conceptual part in detail as described in Ayurvedic texts. Present article includes, review of concept of Sveda and Svedavaha Srotasa described in Avurveda, mechanism of sweating as per Ayurvedic texts and its correlation with the process of sweating described in modern sciences and focuses on its importance in the practice. All available Ayurvedic texts, all available books of physiology, online sites like Google scholar. PubMed, Medline Plus etc., have been searched out to explore the concept.

# **Concept Review**

## Sveda

After digestion of food three types of *Malas* or waste products are mainly formed – *Purisha* (stool), *Mutra* (urine) and *Sveda*. *Sveda* means *Gharm* (sweat). *Sveda* is mentioned as Mala of the *Meda Dhatu* in Ayurvedic texts<sup>[4]</sup> but *Acharya Shangadhara* has described it as *Upadhatu* of *Meda*<sup>[5]</sup>. *Sveda* is also mentioned as the site of *Pitta*<sup>[6]</sup>.

Sweat is the secretion of cutaneous sweat glands. Principally it consists of NaCl and water [7].

### Sveda Formation

Sveda is produce in the body after digestion of food, from the Kitta (unwanted) part of Aharpaan and some after metabolism of Meda Dhatu [8]. Acharya Charak explained the process of formation of Sveda in the Sharira Sthana as, Udaka exudating from hair follicles driven out by body heat [9]. Sveda formation and transportation takes place in Svedavaha Srotasa. Vata plays important role in carrying Sveda to the hair follicles and regulating the centres present in hypothalamus. Vyana Vayu having ability to move in all the directions and is responsible for the secretion of Sveda.

Sweating is natural process of the body. Process of formation of sweat is called perspiration. Sweat formation takes place in the human body through sweat glands. Mainly two types of sweat glands are present; eccrine and apocrine glands [10].

Eccrine glands are common sweat glands, occurring all over the body. It is basically a simple tubular structure [11]. At the beginning, it is in the deeper part of the dermis and is highly coiled. The rest part of the gland courses through the dermis to

epidermis and opens in the exterior. Sweat is synthesized in the coiled portion of the gland [12]. Apocrine glands are found in axilla, pubic genital region, around the nipple, external ear and eyelids. Mostly increase activity during puberty. These are opens into hair follicles and have thick secretions [13].

### **Regulation of Sweating**

Regulation of sweating is maintained by *Vyana* and *Samana Vayu*. *Samana Vayu* lies near the Agni and carries *Udaka* and *Sveda* while *Vyana Vayu* eliminates *Sveda* and helps to regulate sweating [14]. Also *Acharya* has described the concept of *Malayana* i.e., channels or opening for the excretion of waste products in the body. Two are present in the lower part of the body, seven are present in the head region and numerous openings are present all over the body for excretion of *Sveda* through which elimination and regulation of *Sveda* takes place [15]. *Acharya Charak* has described the total number of hair follicles present in the human body in *Sharira Sthana*. These are twenty nine thousand nine hundred fifty six, through which the excretion of *Sveda* takes place [16].

According to modern physiology, sweating is regulated by the autonomic nervous system. Stimulation of the anterior hypothalamus- preoptic area either electrically or due to the excessive heat causes sweating [17]. Nerve impulses from this area cause sweating are transmitted in the autonomic pathways to the spinal cord and then through the sympathetic outflow to the skin everywhere in the body [18].

### Srotasa

Those from which *Sravana* or flow of body substances take place in the body are called *Srotasa* [19]. The *Srotasas* are the channels in the body which are involved in the un-interrupted transportation of tissues undergoing transformation [20]. Human body is made up of millions of *Srotasas*. These are macroscopic and microscopic in nature and of two types- *Bahya* and *Abhyantara Srotasa*. *Acharya Charak* and *Vagbhata* have described thirteen types of *Srotasa* and *Acharya Sushruta* has described eleven types of *Srotasa*. These all *Srotasa* are located within the *Ashaya* (space) of the body and are different from the *Sira* or *Dhamanies*.[21]

### Svedavaha Srotasa

This *Srotasa* is explained in detail by *Acharya Charak* in *Viman Sthana. Sveda* is produced and carried by *Sveadavaha Srotasa* in human body.

# Moolsthana (Roots) of Svedavaha Srotasa

Moolsthana of Svedavaha Srotasa are Lomakupa and Meda Dhatu [22]. Acharya Sushruta did not explained the Svedavaha Srotasa but he mentioned that there are Adhogami and Tiryaka Dhamani network is present in the body which helps to regulate the Sveda formation and regulation [23]. Acharya Dalhana

also mentioned the existence of *Svedavaha Srotasa* in his commentary [24].

# Sveda Karma (function)

The function of *Sveda* is *Kledadharana* that means to maintain the moisture of the body. *Kesha* (hair) is used as alternative word for *Kleda* (moisture) and it is believed that, *Sveda* helps to keep body hairs more stable [25]. *Sveda* helps to maintain normal quantity of water and keeps skin smooth and soft [26].

The main function of the sweat is regulation of body temperature, excretion of waste material from the body and to keep skin moisturized and soft.

# Causes of Vruddhi and Kshaya of Sveda

Grishma rutu (summer season), Pittapradhana Prakruti, vitiation of Pitta Dosha, obese person, exercise, spicy food, alcoholic beverages, hot drinks like tea or coffee, psychological factors like anger or fear naturally causes Vruddhi (excessive sweating). Cold climate, depletion of Meda Dhatu causes less sweating.

### Causes of vitiation of Svedavaha Srotasa

The causes of vitiation of *Svedavaha Srotasa* are heavy exercise, excessive exposure to heat, unsequential hot and cold practices, excessive anger, excessive grief and excessive fear [27].

# Vruddhi Kshaya Lakshane

*Vruddhi* of *Sveda* may cause excessive sweating, odour or *Kandu* (itching) [28]. *Kshaya* of *Sveda* may cause less or no sweating, contraction of sweat glands and hair follicles, alteration of skin colour, falling of

hair, dryness or scaling of skin, alteration of sensation<sup>[29]</sup>.

Excessive sweating is termed as hyperhidrosis in modern science and it is of two types- primary (excessive sweating not caused by another disease) and secondary (occurs as a result of another medical condition). Some known causes of excessive sweating are obesity, hormonal changes associated with menopause (hot flushes at night), infections like tuberculosis. osteomyelitis diabetes. etc. hyperthyroidism, some medications like antidepressants, acetylcholinesterase etc.

Less sweating is termed as hypohidrosis and no sweating is termed as anhidrosis. This can be occurs for many reasons like skin disorders, skin burns that damaged sweat glands, dehydration etc.

# Symptoms of Vitiation of Svedavaha Srotasa

The symptoms of vitiated *Svedavaha Srotasa Atisvedana* (excessive sweating), *Asvedana* (less or no sweating), *Lomharsha* (horripilation), *Parushya* (dryness of skin), *Ati-shlakshnata* (glossy skin) and *Paridaha* (generalized burning sensation of skin) [30].

### Vyadhi and Svedavaha Srotasa

Vitiation of *Svedavaha Srotasa* may cause various diseases. Symptoms of vitiation of *Svedavaha Srotasa* are mentioned in various diseases as *Roop* or *Purvaroop* or as part of *Vyadhi Samprapti*. Diseases where *Sveda* or *Svedavaha Srotasa* gets vitiated are mentioned below.

		Vyadhi	Svedavaha Srotasa Lakshana
1	As a <i>Purvaroop</i> (premonitory symptoms)	Jvara [31] Raktpitta [32] Kushtha [33] Pandu [34]	Sveda Avarodha (no sweating) Sveda, Paridaha Asvedana (less or no sweating), Atisvedana (excessive sweating), Parushya (dryness of skin), Kandu (itching), Paridaha (burning sensation over skin), Lomharsha (horripilation) Sveda Abhava
		Vatarakta [35] Prameha [36]	Atisveda or Asveda Paridaha, Sveda (excessive sweating), Angagandha (body odour)
2	As a Roop (signs and symptoms)	Vatkaphatmak Jvara [37]  Kaphapittaja Jvara [38]  Sannipataja Jvara [39]  Pittolbana Sannipataja Jvara [40]  Rakta Dhatugata Jvara [42]  Jvara Moksha Lakshan [43]  Ek-Kushtha [44]	Asvedana (no sweating) Muhurmuhu Svedasthambha (repeated episodes of sweating and no sweating) Alpa Sveda or Chirat Sveda Darshana Atisveda  Sveda Tivra sveda pravartana Svinnagata (sweating) Asvedana

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		Pittaja Vatarakta [45]	Atisvedana		
		Sthaulya <sup>[46]</sup>	Atisveda, Daurdandhya		
3	As a part of Samprapti (pathogenesis)	Jvara [47] Abhishangajavja Jvara Udara [48] Vataja Atisara [49] Bhayaja or Krodhaja Atisara	Svedavaha Srotasa Dushti Sveda Dushti due to vitiation of Tridosha Svedavaha Srotasa Avarodha Sveda Vimarga gaman		
		Prameha pidaka <sup>[50]</sup>	Sveda Vimarga gaman because of vitiation of Vata or Pitta. Sveda and other Drava Dhatu becomes Madhur Rasatmaka		
4	As a Arishta Lakshna (omnious signs)	Lepa Jvara [51] According to Acharya Vagbhata [52]	Profuse sweating over face in the morning Profuse, <i>Sheeta</i> (cold) sweating over neck, forehead, heart region and remaining body is <i>Ushna</i> (hot)		

### Chikitsa

Condition of less or no sweating is treated with Abhyanga, Vyayama, Madyapana or with Svedana *Karma* [53], while in the condition of excessive sweating Snana [54] or Sthambhan Chikitsa [55] stated as useful. All Acharya's are mentioned that, Snana helps to remove sweating and dirt from the body. *Stambhan* is opposite to Svedan Chikitsa so it is used in the condition of Atiswedana. The daily regimen like Snana, Udvartana mentioned in Ayurvedic texts are helps to remove Sveda and reduce odour so these can be use for the treatment of excessive sweating. In Samhita, Svedopaga (Drvya which enhance sweating) Gana is mentioned by Acharya which is also useful in the treatment. Shobhanjana (Moringa oleifera), Earanda (Ricinus communis), Punarnava (Shweta and Rakta, Boerhaavia diffusa), Yava (Hordeum vulgare), Kulatha (Macrotyloma uniflorum), Masha (Vinga mungo), Badar (Ziziphus mauritiana) and Arka (Calotropis gigantea) the contents of Svedopaga Gana[56] which helps to enhance sweating. The Dravyas which has physical properties like Ushna (hot), Tikshna (sharp), Sara (mobility), Snighdha (oiliness or softness), Ruksha (dry), Sukshma (small), Drava (liquidity) are also helpful to enhance sweating<sup>[57]</sup>. The vitiation of Svedavaha Srotasa is treated same as Jvara Chikitsa [58]. In Ayurveda, *Mandagni* or poor digestive power is the major cause of the disease. The treatment described in *Ivara Chikitsa* like *Langhana*, *Pachana* helps to increase the digestive power, digest Aam and reopens the obstructed body channels. Svedana Karma directly helps increase sweating and to helps thermoregulation. Also Pralepa, Parisheaka, Avagahas Sveda, Abhyanga Dravya which are hot or cold in potency mentioned in Jvara Chikitsa are also useful to treat the symptoms of vitiation of Svedavaha Srotasa<sup>[59]</sup>. Pragharsha (rubbing) made up with Shirisha, Lamajjaka (Ushira), Hema (Nagakeshara) and

Lodhra help to reduce excessive sweating [60]. Chandnadya tail and Aguruvadya tail mentioned for Abhyanga in Jvara Chikitsa is also useful to treat the symptoms of vitiation of Svedavaha Srotasa, also same Dravyas are use for Parisheaka or Avagaha [61,62]. In Ahara Kalpana, Manda is helpful to increase sweating because of its Ushana and Drava Guna [63]. Also Yavagu and Peya are mentioned by Acharya Charak in Jvara Chikitsa are also helpful to enhance sweating because of its Ushana and Drava Guna [64,65].

Excessive sweating is treated with topical applications like deodorants and anti perspirants which reduce sweating and odour, oral anticholinergic medications to block the sweat glands. Less sweating is treated by treating underline cause.

### **OBSERVATIONS**

Detail description of Sveda and Svedavaha Srotasa with their normal function, causes and symptoms of vitiation and treatment has explained in Ayurveda. Sweat is evaporation of water through the skin which related with body heat. It assists in the process of thermoregulation by evaporation. Sweating is normally more or profuse in Grishma Rutu, in Pittapradhana Prakruti person, in obese person so all these conditions are important in the treatment. Sweating can be affected by the emotional factors like anxiety, fear, anger or due to emotional stress, so these conditions or state of mind should be taken in the consideration. We can assess Svedavaha Srotasa by skin examination, hair follicles and Meda Dhatu because these are the roots of this channel and as also described in modern science, sweating occurs directly through the skin or produced in the sweat glands and excrete through hair follicles and after the metabolism of the adipose tissue. Formation and regulation of Sveda is maintained with the help of Vyana and Samana Vayu. Physiology of sweating explained by

Acharya's is same as explained by the modern sciences but with different terminologies. Acharya has described Sveda Dushti Lakshane (symptoms of vitiation) and Svedavaha Srotasa Dushti Lakshane separately. Normal formation and elimination of sweat plays important role in the maintenance of healthy state of body and similarly vitiation of sweat or Svedavaha Srotasa in the manifestation of various diseases. Many Dravvas and formulations are mentioned in many places in ayurvedic texts which increase sweating (e.g., Vatsanabha. Tribhuvan Kirti Rasa) or help to enhance sweating (e.g., Shobhanjana, Earanda, Tila etc). These are used to treat conditions affecting Sveda and Svedavaha Srotasa. The treatment of Sveda Kshaya is directly described in Avurvedic text but treatment of Sveda Vruddhi is described mainly in the daily regimen like Snana and *Udvartana*. Daily use of these regimen helps to remove Sveda and reduce odour. Previous work is done on these daily regimen mentioned in *Dinacharva*, in that usefulness of these regimen is described in detail with its mechanism. Udvartana is mentioned in the treatment of Sthaulya. Dravva used for this are mainly Ruksha, helps to reopen channels, reduce sweat and odour and helps in metabolism of adipose tissue so this can be used in *Sveda Vruddhi* [66]. Also many herbal anti perspirants are available in market which help to reduce sweating and odour. Many previous works have been done already in anti perspirants in Ayurveda which helps to treat this condition without causing any side effect. Clinical study was also done to evaluate the efficiency of Ayurvedic deodorant<sup>[67]</sup>. Svedana is described as Chikitsa in many places in Ayurvedic texts. The detail description of Svedana karma with its detail description is available in Ayurveda. In clinical practice. Svedana Chikitsa is mainly used as Bahva Chikitsa or Abhyantara Chikitsa. Svedana is mainly classified according to Agni Bheda (Sagni and Niragni), Guna Bheda (Snigdha and Ruksha), Sthana Bheda (Ekanga or Sarvanga) or Prayoga Bheda (Mrudu, Madhvam and Mahat) [68]. In the conditions where Svedana is contraindicated like Prameha, Kushtha, Sthaulya, one can use Niragni Svedana to treat such conditions. Numbers of papers are already published on the Svedan Karma with its mechanism and efficacy in the treatment.[69,70]

### **DISCUSSION**

The purpose of Ayurveda is to maintain the healthy state of body. In order to maintain this; *Dosha, Dhatu* and *Mala* must be at equilibrium in the body. After digestion of food, waste products are formed in the body called *Mala. Sveda* is one among them. It helps to maintain moisture and *Snigdhatva* in the body and also helps to regulate body temperature. This same mechanism is described by *Acharya Charak* in the *Sharira Sthana*. Sweating depends on the specific heat

to cool down the body temperature. In hot climate or when body heat increases, sweat glands produce sweat and evaporated through the skin. The evaporation takes away latent heat and helps to maintain body temperature. Sweat evaporates from the skin with the help of heat and this mechanism is described in ayurveda as well as in the modern science. Sveda is carried out by Sveadavaha Srotasa (body channels carrying sweat). Acharva Sushruta did not mention Svedavaha Srotasa but he explained the Adhogami and Tiryaka Dhamanis which carry Sveda. Acharya Vagabhata explained Svedavaha Srotasa same as Acharya Charak. As mentioned in the observations, we can assess the Svedavaha Srotasa by Darshana observation or inspection) and *Spartion* (palpitation) Pariksha of Tvak (skin), hair follicles and Meda Dhatu. Acharya has described symptoms of Sveda Dushti and Svedavaha Srotasa Dushti separately. Therefore, when thinking of treatment, the Sveda Dushti and Svedavaha Srotasa Dushti can be seen separately as well as together or with other symptoms. In case of treating Sveda Dushti, the medical conditions cause excessive or less sweating should be taken into consideration- e.g., pregnancy, period of menopause, anxiety, obesity, diabetes, some drugs which may increase sweating like antidepressants. Normal functioning of Sveda and Svedavaha Srotasa is important for the regulation of body temperature. Both these concepts are also important pathologically as they take part in the manifestation of various major diseases. Acharya Charak has described excessive anger, fear or anxiety as a cause for the vitiation of the Svedavaha Srotasa, modern science also accepts that these emotional factors are responsible for excessive sweating so these should be considered in the clinical assessment of Svedavaha Srotasa. The daily regimen like Snana and Udvartana described in Ayurvedic texts are useful to treat the condition of excessive sweating. In modern hyperhidrosis treated sciences. with applications like deodorants and anti-perspirants. A deodorant is a substance applied to the body to prevent or mask body odor due to bacterial breakdown of perspiration in the armpits, groin, and in the foot, and in some cases vaginal secretions. A subclass of deodorants, called antiperspirants, prevents sweating itself, typically by blocking sweat glands. Use of these products is increasing daily so demand is also increasing, but use of these may cause skin irritation, allergic reaction to skin or burning sensation in short term but long-term use of these products may cause blocking of channels which may develop chronic diseases like skin disorders and it is more hazards. In Samhita Svedopaga (Dravva which enhance sweating) Gana is mentioned by Acharya which is also useful in the treatment. All these Dravyas are primarily having Katu Vipaka, Ushna Virya, Laghu Guna. With these qualities they help to enhance the

sweating in human body. Svedana Karma (sudation) is also mentioned in the scriptures. Svedana Karma is described in treatment of many diseases as Purvakarma before any Panchakarma procedure, Pradhan karma in diseases like Urusthambha, after Shastrakarma (surgical procedure), Upanaha Sveda in Apakva Vranshopha, Parisheaka or Avagaha Sveda in Bhagandar Chikitsa and many other indications of Svedana is described in detail in all Ayurvedic texts. So Svedana Karma can be considered as clinical application of Sveda because it helps to eliminate toxic substances from the body, brings softness to the skin and also used in the treatment of various pathological conditions.

#### CONCLUSION

Normal sweating is important physiologically as it is necessary to moisturize the skin and to maintain the body temperature. Svedavaha Srotasa also plays the key role in this because it carries sweat. It is also important pathologically because vitiation of this may leads to various diseases. Presently people facing the problem of less or excessive sweating quiet often because of lifestyle and diet they following on daily basis. So it is necessary and demand of current time is to work on these concepts with more deep and precise approach for better management of these conditions. After reviewing the literature it turns out that, in Avurveda the detail description of both these concepts has been done in detail with its clinical application. The clear explanation of mechanism of sweating is explained by Acharya Charak and Acharya Sushruta in Sharira Sthana. The conceptual part of Sveda and Svedavaha Srotasa is studied in this article. The detail mechanism of sweating is reviewed. The survey study in number of people for the assessment of Svedavaha Srotasa and patterns of sweating will be for it's more precise and practical implementation in practice.

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