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"SKIN-GUT AXIS" THE RELATIONSHIP BETWEEN *ĀMA DOŚA* AND *TVAK VIKĀRA*

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ABSTRACT

In the present era of modernization, a change of life style of human being has created several disharmonies in his biological system. Altered dietary habits (viruddha annapāna, adhyaśana) lead to hyposecretion of digestive juices and diminished gastrointestinal motility which precipitates as āma dośa. āma is manifested due to the derangement of jaṭharāgni. Due to āma dośa, the śārīrika doṣa deviate from its normal proportions and furthermore disturbs dhātu-sāmyatā. āma is responsible for various diseases. It gets lodged into raktavaha strotasa and causes avarodha of the involved strotasa where doṣa-dūṣya sammūrcchanā occurs. When these vitiated doṣa-dūṣya gets sṭhānasaṁśraya in tvak then they manifested as tvak vikāra. According to modern science, the gastrointestinal and cutaneous systems are closely linked in origin. Dermatological findings are commonly associated with underlying gastrointestinal diseases. It can be understood on the basis of Skin-gut axis. Both skin and gut inhabit a vast community of bacteria and their metabolite, known as skin and gut microbiome which work in harmony. Any disturbance in the gut microbiome (in case of āma dośa) interrupts its harmony with skin microbiome, thus altering homoeostasis (dhātu-sāmyatā). This leads to many gastrointestinal and dermatological manifestations.

Keywords: *āma dośa, tvak vikāra, Skin-gut axis, Skin microbiome, Gut microbiome.*

INTRODUCTION

In 2013, skin conditions contributed 1.79% to the total global burden of disease measured in DALYs (Disability-adjusted life years) across 360 diseases and injuries. Skin diseases were the fourth leading cause of years lived with disability worldwide (behind anaemia, tuberculosis and sense organ diseases). Skin diseases like*sidhma*(psoriasis),*dadru* (fungal skin diseases), *yuvānapiḍikā* (acne vulgaris), *kaṇḍū*(pruritus), *indralupta* (alopecia areata), *śītapitta*(urticaria), *jālagardabha*(cellulitis), viral skin diseases, pyoderma, dermatitis and other skin conditions resulted in the greatest burden of the skin conditions, costing 9.3 million DALYs.[i]

Not only do skin diseases cause substantial pain, disfigurement and both psychological and financial morbidity by hampering one's ability to function and social participation, but dermatological findings are often the initial manifestations of systemic disease. To lessen this global burden and for improvement of the quality of life it is necessary to be aware of all the risk and causative factors of skin manifestations. In *āyurveda*, *agni* is one of the main determinants of health. It is not merely responsible for the digestion of food but also maintains the complexion of the skin. In present era of modernization, the human beings constantly practicing altered food habits and not following the *aṣṭa āahāra vidhiviśeṣāyatana* (8

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dietary ethics) that disturbs the status of *agni*. This results in the hyposecretion of digestive juices and diminished gastrointestinal motility which precipitates as *āma dośa*. It disturbs the homeostasis of the body by deviating *doṣa* and *dūṣya* from their normal proportions. When it gets lodged into *raktavaha strotasa* along with vitiated *doṣa* and *dūṣya*, it manifested as *tvak vikāra* viz. skin disease. Thus, it is observed that status of *agni* and *āmadośa* plays a crucial role in the pathogenesis of *tvak vikāra*. Even modern science accepted the skin gut relationship. The gastrointestinal and cutaneous systems are closely linked in origin. Dermatological findings are commonly associated with underlying gastrointestinal diseases. It can be understood on the basis of Skin-gut axis. Both skin and gut inhabit a vast community of bacteria and their metabolite, known as skin and gut microbiome which work in harmony. Any disturbance in the gut microbiome results in intestinal dysbiosis (*āma dośa*) and interrupts its harmony with skin microbiome, thus altering homoeostasis (*dhātu-sāmyatā*). This leads to many gastrointestinal and dermatological manifestations.

AIM & OBJECTIVES

1. To review *āma dośa* from Ayurvedic texts.
2. To understand the role of *āma dośa* in *samprapti* of *tvak vikāra*.
3. To understand the skin-gut axis.

MATERIAL & METHODS

The study is based on review of *āyurveda*and modern texts and international journals and also with researches related to the subject.

AYURVEDIC REVIEW

Āma dośa

Āma is the substance, which is not digested properly and needs further digestion or a substance which is incompletely metabolized or partially metabolized is called as *āma*. *vāgbhaṭṭa* was the first author to define *āma* as a separate entity. According to him, the food which is not completely digested due to hypofunction of *ūṣmā* (*agni*), yields immature *rasa* in *āmāśaya* and due to its retention, undergoes fermentation and/or putrification.[ii] Though the description of *āma* being developed in *āmāśaya* has been described here, but the word *āma* has a generalized meaning which can be applied to any sort of working of*agni* in body.

Bhāvaprakāśa also stated that food if not digested properly due to the hypofunction of *agni* gets the name āma and becomes the root cause of pain especially headache and generalized bodyache.[iii]

Again, *vijayarakṣita* stated that due to the feebleness of *agni* a residue of *āhārarasa* which is still left as undigested known as *āma*, is the root cause of all disease.[iv]*vijayarakṣita* compiled the three different opinions about *āma*. First view is about the improperly digested food. Second view describes the accumulation of *mala* in the different parts of body termed as *āma*. Third view is about the stages of *dośaduṣṭi* or disease, which says the first stage of *dośa duṣṭi* or disease is *āma*.[v]

There is no direct reference of *āma* is available in *carakasaṁhitā*. While describing the pathogenesis of *grahaṇī roga*,there isindirect reference of *āma.* According to it, when *agni* gets vitiated due to *nidānasevana*, it becomes incapable of digesting the ingested foodand this undigested food after getting fermented turns into poisonous substance which is known as *āma.*[vi]

DISCUSSION

There is no direct reference of *āma* as a *nidāna* of *tvak vikāra*. In *caraka saṁhitā*[vii] and *mādhavanidāna*[viii] while describing the *nidāna* of *kuṣṭha*, *ajīrṇa* and *adhyaśana* are considered as one of the potent *nidāna* of *kuṣṭha*. In his commentary *vijayarakṣita* elaborated that *ajīrṇa* and *adhyaśana* hampered the activity of *agni* resulting in complete and partial digestion that ultimately leads to *āma*[ix]and this indicates its involvement in the pathogenesis of *kuṣṭha*. Almost all the *ācārya* used grave terms to emphasizes on its seriousness (like समूलंसर्वरोगाणामाम[x]……, …….. बहुविकारकारि[xi], ……हेतुसर्वरोगाणां[xii], ……रोगसङ्करम्[xiii]). These all citations ensure the role of *āma* as a potential causative factor of all the diseases including skin diseases.

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Samprāpti* of *tvak vikāra/kuṣṭha

ajīrṇa and *adhyaśana*

↓

agnimāndhya

↓

formation of *āma* and *āmaviṣa*

+

tridoṣaprakopa

↓

gamana of *āma* and *doṣa* in *tiryak gata dhamanī*

↓

vitiation of *tvacā-rakta-māṁsa-lasīkā*

↓

sṭhānasaṁśraya of *doṣa-dūṣya* in *tvacā,rakta* and *māṁsa*

↓

tvak vikāra/kuṣṭha

MODERN REVIEW

Skin-Gut Axis

The "brain-gut-skin axis" has been eloquently documented by Arck et al[xiv] and Bowe and Logan[xv]. It is known that psychosocial stress is implicated in both exacerbation and the initiation of various skin conditions[xvi]. It is plausible that the intestinal microflora produces neurotransmitters in response to stress and other external stimuli that could modulate skin function via neural pathways. For instance, commensal organisms in the gut can produce norepinephrine, serotonin, and acetylcholine or may evoke the release of neuropeptides from nearby enteroendocrine cells[xvii].

Link Between Skin Disease and The Gut

Gastrointestinal disorders can present with dermatological skin findings. IBD is linked to skin manifestations such as pyoderma gangrenosum, erythema nodosum, Sweets Syndrome and oral lesions[xviii]. Celiac disease is associated skin manifestations such as dermatitis herpetiformis, alopecia, vitiligo and oral mucosal lesions. Furthermore, psoriasis is more commonly found in patients with Crohn's disease than healthy people[xix]. There is emerging evidence linking certain dermatological disorders to gut dysbiosis. In 1911 a gastroenterologist named Milton H. Mack wrote, "Acne and eczema are both traceable to this fountainhead of diseases… if in a case of urticarial we look to the intestinal track, why not in eczema and acne?" [xx]. Simultaneous gut and skin microbiome dysbiosis have been observed in several inflammatory skin diseases, such as rosacea, psoriasis, and atopic dermatitis[xxi].

Psoriasis

Interestingly, patients with psoriatic arthritis are at increased risk of developing IBD and have subclinical evidence of gut inflammation[xxii].

Less diverse gut microbiome such as Akkermansia, Ruminococcus, and Pseudobutyrivibrio

Causes psoriasis

+

Simultaneous reduction in the ability of gut to regulate immune response

Induces systemic or localized inflammation

Causes Inflammatory bowel disease (IBD)

Atopic Dermatitis

Gut microbiome dysbiosis and low diversity within the gut microbiota

Causes allergic skin conditions like atopic dermatitis

Conversely, increased microbial diversity within the gut has been associated with reduced flares in inflammatory skin diseases, such as atopic dermatitis.

CONCLUSION:

Nearly all diseases as per the ayurvedicview have their origin from *āma dośa*. Even one of the synonyms of *vyādhi*-'*āmaya'* reiterates this. The indulgence in unwholesome diet and daily regimen ultimately leads to vitiation of *agni* and this malfunctioning *agni* produces *āma*. Hence it is very important to know in detail about *āma* and assess and understand its role in the pathogenesis of *tvak vikāra*. Modern science also acknowledges this concept. The intimate relationship between the gut and skin is undeniable. Possibly, both the intestinal bacteria themselves and their metabolic by-products influence skin physiology. Bacterial products and diet could alter the physiology of the gut epithelium, resulting in different secretory products that might circulate systemically and reach the skin and directly alter the skin or alter the skin's commensal bacteria.

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[i] Karimkhani C, Dellavalle RP, Coffeng LE, Flohr C, Hay RJ, Langan SM, et al. Global Skin Disease Morbidity and Mortality: An Update from the Global Burden of Disease Study 2013. JAMA Dermatol [Internet] 2017 Mar 1; Epidemiological study based on the 2013 Global Burden of Disease project that measures the burden of skin diseases worldwide, with burden of individual skin diseases measured in DALYs.

[ii] *vāgbhaṭṭa*;*aṣṭāṅgahṛdaya*, *sarvāṁgasundarā*and *āyurveda rasāyana*commentary by *aruṇadatta* and *hemādri*edited by *hari sadāśiva śāstrī pāradakara*; *caukhambhā sṁskṛta sṁsthāna*, *vārāṇasī*, Reprint 2014, sūtrasthāna 13/25, Page no. 216

[iii] *śrī bhāvamiśra*; *bhāvaprakāśauttarārddha* edited with the *vidyotinī hindī* commentary by *bhiṣagratna paṇḍita śrī brahma śaṅkara miśra*; *caukhambhā sṁskṛta sṁsthāna*, *vārāṇasī*, 9th Edition 2005, *madhyama khaṇḍa* 26/5,Page no. 278

[iv]*Mādhavakara; mādhavanidāna;madhukoṣa*commentary by*vijayarakṣita*and*śrīkaṇṭhadatta*and with extracts from*ātankadarpaṇa*by *vācaspativaidya* edited by *vaidya yādavajī trikamajī ācārya*; *caukhambhā* Orientalia, *vārāṇasī*, Reprint Edition 2017, Chapter 25/1-5, Page no. 186

[v]*Mādhavakara; mādhavanidāna;madhukoṣa*commentary by*vijayarakṣita*and*śrīkaṇṭhadatta*and with extracts from*ātankadarpaṇa*by *vācaspativaidya* edited by *vaidya yādavajī trikamajī ācārya*; *caukhambhā* Orientalia, *vārāṇasī*, Reprint Edition 2017, Chapter 25/1-5, Page no. 186

[vi]Agniveśa, caraka saṁhitā, *āyurvedadīpikā*commentary by śrīcakrapāṇidattaedited by *paṇḍitayādavajī trikamajī ācārya*; *caukhambhāsubhāratīprakāśana*, *vārāṇasī*, Edition 2017,*cikitsāsthāna*15/44, Page no. 517

[vii]Agniveśa, caraka saṁhitā, *āyurvedadīpikā*commentary by śrīcakrapāṇidattaedited by *paṇḍitayādavajī trikamajī ācārya*;*caukhambhāsubhāratīprakāśana*, *vārāṇasī*, Edition 2017,*cikitsāsthāna*7/6, Page no. 450

[viii]*Mādhavakara; mādhavanidāna;madhukoṣa*commentary by*vijayarakṣita*and*śrīkaṇṭhadatta*and with extracts from*ātankadarpaṇa*by *vācaspativaidya* edited by *vaidya yādavajī trikamajī ācārya*; *caukhambhā* Orientalia, *vārāṇasī*, Reprint Edition 2017, Chapter 49/1-6, Page no. 280

[ix]*Mādhavakara; mādhavanidāna;madhukoṣa*commentary by*vijayarakṣita* and*śrīkaṇṭhadatta*and with extracts from*ātankadarpaṇa*by *vācaspativaidya* edited by *vaidya yādavajī trikamajī ācārya*; *caukhambhā* Orientalia, *vārāṇasī*, Reprint Edition 2017, Chapter 49/1-6, Page no. 281

[x]*Mādhavakara; mādhavanidāna;madhukoṣa*commentary by*vijayarakṣita*and*śrīkaṇṭhadatta*and with extracts from*ātankadarpaṇa*by *vācaspativaidya* edited by *vaidya yādavajī trikamajī ācārya*; *caukhambhā* Orientalia, *vārāṇasī*, Reprint Edition 2017, Chapter 25/1-5, Page no. 186

[xi]Agniveśa, caraka saṁhitā, *āyurvedadīpikā*commentary by śrīcakrapāṇidattaedited by *paṇḍitayādavajī trikamajī ācārya*;*caukhambhāsubhāratīprakāśana*, *vārāṇasī*, Edition 2017,*cikitsāsthāna*15/44-45, Page no. 517

[xii]*vāgbhaṭṭa*;*aṣṭāṅgahṛdaya*, *sarvāṁgasundarā*and *āyurveda rasāyana*commentary by *aruṇadatta* and *hemādribhiṣak ācārya*edited by *hari sadāśiva śāstrī pāradakara*; *caukhambhā saṁskṛta saṁsthāna*, *vārāṇasī*, Reprint 2014, sūtrasthāna 13/27, Page no. 217

[xiii]*paṇḍita śārṅagdharaācārya*; *śārṅgdhara saṁhitā* with commentary *dīpikā* by *bhiṣagvara āḍhamalla* and *gūḍhārthadīpikā* by *kāśīrāmavaidya* edited by *paṇḍita paraśurāmaśāstrī vidyāsāgara*; *caukhambhā*publication, New Delhi, Reprint 2013, *pūrvakhaṇḍa* 6/6, Page no. 67

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