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Relevance of Visha Vega W.S.R. to Dermatological Manifestations of Occupational Toxicity - A Review Article

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ABSTRACT

In Ayurveda, Acharya explained Visha Vega concept related to Agadtantra. Agadtantradescribes various types of *Visha* such as *Sthavara Visha*(Inanimate poison), *Jangama Visha* (Animate poison) and *Kritima Visha*. These *Visha*, when it enters into the body, it passes through the different*Dhatus* and give rise to different stages of *Vega* in the body and accordingto these *Vegas,* different types of signs and symptoms appear on the body.As graduallystages of *Vega* progresses, their signs and symptoms becomemore severe. If we diagnosed thedifferent *Vegas* of *Visha* at the right time, we could treat those patients better.Occupational toxicity leads to various dermatological manifestations. Visha Vega, an ancient Ayurvedic concept, offers a comprehensive understanding of toxic substances and their effects on the body &skin. Now a days the effect of industrialization and commercialization are rapidly spreading which increases the chance of contact with toxins. Large portion of workplace illness causes today because of occupational toxicity. All industries use chemicals this hazardous chemical act directly on the skin resulting in local irritation or an allergic reaction. It is usually accidental. Long term exposure to occupational toxins also causes occupational dermatitis, Cancer, Anemia, Lung disease, and De-pigmentation of the skin. This occupational toxicity is similar to second,third & fourth Visha Vega of sthavar visha mentioned by Charaka.This article delves into the relevance of Visha Vega in addressing dermatological manifestations of occupational toxicity, highlighting correlation between Visha Vega & dermatological manifestations of occupational toxicity its significance in prevention, diagnosis, and treatment.

Keywords: Visha,Visha Vega, Dermatological Manifestations, Occupational toxicity.

I. INTRODUCTION

'*Agada Tantra'* is one of thedisciple of*Astanga Ayurveda*,it describes the origin and types of *Visha*, itssign and symptoms and management [1].*Visha* has been classified mainly into two types-*Sthavara Visha* (Inanimate) and *Jangama Visha* (AnimatePoison). *Visha Vega* is made up of two words- *Visha* and *Vega*.*Visha* means the substance which causes vitiation of*rasadi dhatus* and hampering the health orlife of a person is termed as *Visha.*The literally meaning of *Vega* is impulse, speed,velocity, circulation, effect etc. So the meaning of*Visha Vega* is impulse or circulation or effect of thepoison [2].

VISHA VEGA

The *Visha* after entering into the body passes fromone *kala* to another *kala* which are located inbetween the *dhatus* and thus gives rise to the differentstages of *Vega* that is described in *ShariraSthana*of *Sushruta Samhita* [3] [4]. *Acharya Sushruta* has described about the seven *kalas*which arelocated between the seven *dhatus* as *Rasa,Rakta, Mansa, Meda, Asthi*, *Majja, Shukra.kala* is a septal membrane that is locatedbetween the *dhatus* and *Ashayas*[5].In *2nd Rakta &3rd Mansa visha vega*thedermatological manifestations are mentioned which can be correlated with dermatological Manifestations of Occupational Toxicity.Occupational toxicity is a growing concern, with skin disorders being a common outcome.Visha Vega, a concept in Agadtantra, categorizes *visha vegalakshanas* and describes their effects on the skin and all over the body. Occupational toxicity can lead to various

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dermatological manifestations, causing significant morbidity and impacting workers quality of life. *Visha Vega*, an Ayurvedic concept, offers valuable insights into understanding the effects of toxic substances on the skin and their early diagnosis and management.

SKIN MANIFESTAIONS DUE TO STHAVARA VISHA / OCCUPATIONAL TOXINS[6]

Strong acids

Strong acids may cause corrosion and burning of the tissues and charring & blackening of the skin. Tissue may get dehydrated with no blisters in case of acid. Scar remains permanently.

Strong alkali

Strong alkalis act as corrosive poison. On contact with skin may cause blister and brownish discolouration. eg. Sodium hydroxide

Non- metallic irritant poison

Phosphorus may cause subcutaneous haemorrhages, 2nd & 3rd degree with blisters and tissue necrosis. There is rapid penetration and delayed wound healing. Bromine may cause chronic ulcer on external contact. Chlorine causes irritation of skin in swimmer.

Metallic irritant poison

Arsenic poisoning may lead to alopecia, hyperkeratosis, aldrich- mess line on nails and raindrop pigmentation. Large population-based studies from West Bengal in India showed a relationship between arsenic concentration in tube well water and hyperpigmentation and keratosis. Arsenic may cause a basal cell carcinoma in a non-melanin pigmented skin [7] Mercury poisoning has skin manifestations like acrodynia or pink disease, itching, acral rashes and desquamation of palms and soles. Lead poisoning has dermatological symptoms like pallor face and alopecia. Copper poisoning may cause contact dermatitis and bluish-greenish discolouration of skin and gums.

Irritant plant poison [8]

Jayapala (Croton tigilum) cause burning sensation, redness and vesication. Gunja (Abrusprecatorius) may produce symptoms which resemble like viper snake bite. Inflammation, oedema, oozing, and necrosis. Ergot (Clavicepsperpura) produces dry gangrene without swelling and ulceration. Arka (Calotropis procera) causes redness with blisters and excoriation later. Bhallataka (semicarposanacarium) produces bruises and blisters.

Such can be categorized into animate poison, inanimate poison and artificial poison. Inanimate poisons include cumulative toxicity of herbs (phytotoxins, toxa-albumins), chronic exposure to metal & mineral (dyes, paints etc.) Animate poison may be considered as rat bite, keeta, loota visha etc. Artificial poison include agriculture pesticides and fertilizers, medicinal preparations, alcoholism, incompatible diet. Skin manifestations like Vaivarnya (vitiated body complexion), kustha (skin diseases), mandal (cicular skin lesions), kotha (skin rashes), aruh (eruptions on skin) are observed on exposure to above said dooshivisha [9]. Cosmetic Toxicity is one of the major cause of skin problems. Cosmetic products conatins various chemical agents which may not be suitable to every individual and and may also end up having adverse reaction over prolonged use. Lotions contain Propylene glycol which may cause contact dermatitis and retinyl palmitate which has potential to change skin DNA, produce free radical and increase risk of cancer. Sunscreen lotions contain cinnamate and salicylate which are known to cause skin rash. Lipstick colour are from coal tar dyes which have every potential to cause skin irritation, allergy and malignancy. Cleanser and body wash contain sodium and ammonium laurel sulphates which are skin irritants and probable carcinogens [10].

VISHA VEGA OF STHAVARA VISHA INHUMAN BEINGS (ACCORDING TO SUSHRUTA)

कफप्रसेको**वैवर्ण्य**पर्वभेदश्चपञ्चमे।
सर्वदोषप्रकोपश्चपक्काधानेचवेदना।।सु. क. २/३८

As the *Visha* passes from one *kala* to another *kala*,it produces signs and symptoms, whichare termed as "*Visha Vega*". *Acharya Sushruta* hasdescribed about *Visha Vega* in *Sarpadasta VishaVigyaniya*chapter of *Kalpasthana* and stated that*kala,* are situated between the *dhatus*, areseven in number [11]. When *Visha*crosses these *kalas*, *Visha Vegas* are generated.

Vegantara

The time in which the *Visha* travels from one *kala*to another *kala* breaking the barriers stimulated by*Vata,* is known as *Vegantara*[12].*Acharya Charaka* has described eight *Visha Vegas*which are

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common to both *Sthavara Visha* and*Jangama Visha* [13], while*Acharya Sushruta*have described seven *Visha Vegas*.

***Visha Vega of Sthavara Visha* inHuman beings (According to Charaka)**

असृप्रदोषाद्द्वितीयेतु।।**वैवर्ण्य**भ्रमवेपथुमुर्च्छाजृम्भांगचिमिचिमातकाःदुष्टपिशिता।
(च.चि. २३/१९)
Symptoms in the second impulse, are abnormal complexion, giddiness, trembling, fainting, yawning, irritation, sensation and feeling of darkness due to vitiation of Rakta.[14]

(तृतीयवेग) -

तृतीये**मण्डलकण्डूश्वयथुकोठाः**।। (च.चि. २३/१९)

(चतुर्थवेग) –
वातादिजाश्चतुर्थेदाहच्छर्घअंगशुलमूर्च्छाद्याः। (च.चि. २३/२०)

In the fourth impulse burning sensation, vomiting, body- (सु.क. ४/५ pain, fainting etc, arise due to vitiation of vāta etc. (dōsas).
In 2*nd Visha Vega when visha is situated in Rakta Dhatu & in* 3*rd Visha Vega when visha is situated in Mansa Dhatu.*Visha Vega describes dermatological manifestations, enabling early recognition and intervention.

TABLE 1: *VISHA VEGA OF STHAVARA VISHA* IN HUMAN BEINGS (ACCORDING TO *CHARAKA*)

Visha Vega	**Vega Location**	**Sign & Symptoms**
2*nd*	*Rakta*	*Vaivarnya*(discolouration of the skin)
3*rd*	*Mansa*	*Mandal* (circular patches) *Kandu*(itching) *Swathu*(swelling) *Kotha*(urticaria)
4*th*	*VaatadiDosha*	*Daha*(burning sensation)

- *Vaivarnya*(discolouration of theskin)
- *AngaChimchim*(tinglingsensation)
- *Mandal* (circular patches)
- *Kandu*(itching)
- *Swathu*(swelling)
- *Kotha*(urticaria)

These symptoms are common manifestations of occupational toxicity.

Dermatological Manifestationsof Occupational Toxicity:

Hazardous chemical can act directly on the skin resulting in local irritation or allergic reactions or they get absorbed through skin, ingested or inhaled. In workplace ingestion of toxic chemicals is usually accidental and most commonly results from handling petrochemical products, contaminated food drinks. Toxicants occurs as gases, vapours, aerosols and dust are the most difficult to control and most hazardous chemical are absorbed through the respiratory tract.Airborne contaminants act as irritants to the respiratory track or as systemic poisons if inhaled.
Toxic effects in such cases depends on the concentration, particle size, and physiochemical properties particularly toxins solubility in the body fluids.
Occupational dermatitis is an inflammatory skin diseasecaused by exposure to certain toxins in a work setting with an estimated prevalence between10% and 17%.OD is split into two forms: irritant contact dermatitisand allergic contact dermatitis (ACD). Research suggeststhat over 90% of OD falls under contact dermatitis (CD),the majority of which affects the hands.[15]

Some occupations with potential exposure to toxins include:
1. Healthcare workers (e.g., handling chemotherapy drugs)
2. Industrial workers (e.g., chemical manufacturing)
3. Agricultural workers (e.g., pesticide exposure)
4. Construction workers (e.g., asbestos)
5. Laboratory workers (e.g., handling hazardous chemicals)

Acute contact eczematous dermatitis frequently arises in workplace environments due to direct exposure to numerous sensitizing agents, caustic chemical irritants, industrial plants, or photoreactive compounds. Clinically, this acute

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phase manifests through localized heat, erythema, pronounced swelling, vesicle formation and serous oozing. Affected individuals typically experience distressing symptoms such as intense pruritus, burning sensations, and generalized localized discomfort. Although these lesions can emerge on any skin surface, they predominantly target the dorsal hands, inner wrists, and forearms. When inflammatory reactions isolate on the forehead, eyelids, face, neck, or ears, diagnostic clinical reasoning points toward an airborne etiology, such as toxic industrial dusts, vapours, or gases.

A cumulative pathophysiological mechanism triggered by repetitive exposure to marginal or moderate workplace irritants can precipitate sub-acute contact dermatitis. This intermediate clinical phase is distinguished by the appearance of dry, erythematous plaques across the exposed skin. When a localized cutaneous inflammation undergoes persistent recurrence over a prolonged duration, it transitions into chronic eczematous contact dermatitis. The anatomical regions most vulnerable to these chronic eczematous lesions remain the hands, fingers, wrists, and forearms. This advanced stage is characterized by marked xerosis, hyperkeratosis (thickened skin), and scaling, which are frequently complicated by painful fissures and deep cracking across the palms and fingers. Concomitant chronic nail dystrophy is also a routine clinical finding in long-standing cases of occupational toxicity.

The vast majority of workplace-related light reactions are phototoxic, triggered when natural or artificial ultraviolet radiation interacts with specific systemic drugs, topical industrial chemicals or plants. Phototoxic responses are strictly confined to areas with direct light exposure. Conversely, photoallergic reactions are immunologically mediated and can manifest across non-exposed skin surfaces. Notable examples of photoreactive industrial chemicals include coal tar distillates such as creosote, anthracene, and pitch while botanical species belonging to the *Umbelliferae* family are also recognized triggers. Occupational environments with high exposure to industrial particulate matter, grease, or cutting oils frequently cause structural blockages of the follicular openings. Chloracne represents the most debilitating form of these acneform conditions, often resulting in severe cosmetic disfigurement through post-inflammatory hyperpigmentation and deep dermal scarring. Changes in cutaneous pigmentation induced by workplace toxicities can be linked to contact with industrial dyes, heavy metals, explosives, chlorinated hydrocarbons, tars, or UV radiation. Hyperpigmentation induced by tar compounds, heavy metals, petroleum oils. severe contact dermatitis or direct occupational contact with antioxidant agents and specific hydroquinone compounds used in commercial adhesives and sanitizing solutions.

Workplace-related neoplastic growths can manifest as either benign or malignant entities.Common benign cutaneous proliferations include traumatic cysts, fibromas, keratoacanthomas, and occupational warts induced by chronic contact with asbestos, petroleum, or tar. While keratoacanthomas are frequently linked to prolonged solar radiation, clinical evidence also associates their development with direct workplace contact with pitch, tar, and crude petroleum fractions.Certain caustic industrial compounds are intensely corrosive to the skin barrier, leading to destructive ulcerative changesFurthermore, granulomatous dermatitis can stem from occupational exposure to biological pathogens, including bacteria, fungi, viruses, or parasites. It can also be induced by the accidental dermal entry and entrapment of inanimate materials or minerals, such as wood splinters, bone fragments, cinders, gravel, coral, silica, beryllium, and zirconium.[16,17]

II. DISCUSSION:

The intersection of industrial globalization and occupational health necessitates innovative diagnostic paradigms, which can be enriched by integrating classical Ayurvedic principles with contemporary toxicology. In this context, the progression of *Visha Vega* provides a sophisticated framework for understanding the systemic and localized timeline of Occupational poisonings. The classical literature dictates that when toxic componentswhether *Sthavara* (inanimate), *Jangama* (animate), or *Kritima* (synthetic/artificial)breach the body's natural biological barriers, they do not remain static. Instead, they systematically migrate through consecutive *Dhatus* via intermediate *Kalas* with each phase of transit manifesting increasingly severe clinical milestones known as *Visha Vega*. When analyzed through the lens of modern occupational dermatology, this sequential cascade mirrors the clinical trajectory observed in factory, agricultural, and chemical workers who suffer from prolonged exposure to caustic materials. Specifically, the acute, sub-acute, and chronic presentations of occupational contact dermatitis,

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acneform dermatoses, and dyschromia reflect a deep tissue infiltration that correlates strongly with the second, third, and fourth *Visha Vegas* of *Sthavara Visha* as documented by Acharya Charaka.

Pathophysiologically, the initial cutaneous responses to industrial toxinscharacterized by acute erythema, local heat, vesiculation, and serous oozingalign with the *Rakta Dhatu* involvement typical of the second *Vega*, where the blood and vascular elements react violently to foreign sensitizers. As workplace exposure persists without adequate engineering controls or barrier interventions, the toxin breaks through deeper cellular boundaries into the *Mansa* (muscle/soft tissue) and *Meda* (adipose) systems, reflecting the third and fourth *Vegas*. This deep-tier accumulation triggers advanced pathologies, such as chronic hyperkeratosis, painful palmar fissures, debilitating chloracne, and profound pigmentary changes like chemical leukoderma. In extreme scenarios of unregulated xenobiotic exposure, neoplastic transformations occur, echoing the terminal, tissue-destructive nature of advanced *Vegas*. By using the *Vegantara* (the transitional interval between stages) as a clinical window, practitioners can predict disease progression. Recognizing these ancient diagnostic indicators allows modern occupational health professionals to look past superficial cutaneous symptoms, trace the underlying systemic load, and stage the toxicity accurately to execute targeted, multi-layered therapeutic interventions before irreversible structural disfigurement or systemic organ damage sets in.

III. CONCLUSION

The ancient Ayurvedic doctrine of *Visha Vega* remains highly relevant in addressing the modern epidemic of workplace dermatological diseases induced by industrialization. This study successfully demonstrates that the progressive tissue infiltration of commercial chemicals and heavy metals corresponds structurally to the sequential *Dhatu* degradation described in *Agadtantra*. *Acharya Charaka*and *Acharya Sushruta* has described various stagesof *Visha Vega* in *Sthavara Visha and Jangama Visha.*The specific sign and symptoms appeared duringthe specific *Vega* of *Visha*. On the basis of these*Veganusara*lakshanas, different types oftreatment procedures are done like Bloodletting,*Vamana*, *Virechana, AwapidaNasya*, administrationof different *agadas*and much more procedures aredone. So these treatment modules are very importantfor the treatment of occupational dermatological manifestations, and it can only bedone to judge them *Veganusara*signs and symptoms.So there is a need to do more research studieson *Visha Vega*and their treatment module in correlation with occupational toxicity.Visha Vega offers valuable insights into understanding and addressing dermatological manifestations of occupational toxicity. Its principles can enhance prevention, diagnosis and treatment strategies, promoting safer work environments and better skin health for workers. Integrating Visha Vega into modern occupational health practices can foster a comprehensive approach to addressing the skin-related consequences.

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