

TOXICOLOGICAL MANIFESTATION OF “HAIR COSMETICS” AND THEIR  
MANAGEMENT - AN AYURVEDIC PERSPECTIVEDr. Alfiya Shaikh<sup>1\*</sup> and Dr. Manohar Khankhane<sup>2</sup><sup>1</sup>PG Scholar, Department of Agadtantra, Sumatibhai Shah Ayurved Mahavidyalay, Hadapsar, Pune.<sup>2</sup>HOD, Department of Agadtantra, Sumatibhai Shah Ayurved Mahavidyalay, Hadapsar, Pune.**\*Corresponding Author: Dr. Alfiya Shaikh**

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**ABSTRACT**

People in every civilization used cosmetics to protect and embellish their skin, hair and nails which naturally leads us to conclude that this is a primordial need. In present state thousands of hurtful toxins are accumulated in environment are taken by the human being itself. Hair cosmetics are one of them. The hair cosmetic industry has undergone a revolutionary change over last two decades. The attention has radically shifted away from simple cleaning to mending, boosting tensile strength reducing oxidative damage, and encouraging growth. Shorter, more modern techniques have developed to make hair appear naturally more glossy, silky, and manageable. The formulation of other products, such as hair dyes and perming/relaxing, is intended to change the colour or structure of the hairshaft. The 'lift' of the hair shaft can be changed by using hair sprays, gels, and waxes. Many of these products contain dangerous ingredients such as Parabens, Phthalates, Sulphates, PEG, Fragrance, Heavy metals like Lead etc. Due to long term use, it accumulates in the body and can cause irritation, Hair damage, Liver damage, Reproductive toxicity and Carcinogenicity. In *Ayurveda*, the concept of *Dushi Visha* can be well incorporate with Hair cosmetic toxicity. The widespread use of Hair cosmetic products is increasingly recognized as a public health and social justice issue due to the deleterious health side effects and the potential reinforcement of racial and social inequalities. So this article review the concepts of Hair Cosmetic toxicity in *Ayurveda* and their management.

**KEYWORDS:-** Hair cosmetics Toxicity, Parabens, Phthalates, *Dushi visha*.**INTRODUCTION**

Cosmetics products are mostly used by individuals to clean and beautify their skin, hair and nails. The cosmetic items used for beautification are applied often and regularly to preserve the desired appearance since these keratinizing structure continue to grow and are impacted by both endogenous and external environment changes. Hair cosmetics are of the most common types of cosmetics used. They are divided into categories according to their chemical formulations and action properties. Since these cosmetic products use both chemical and physical modalities, there is always a chance that they could have momentary negative effect on the skin and hair follicles of scalp. Review of most prevalent side effects of hair cosmetics reveals temporary hair loss, secondary to fibre damage and increased fibre fragility, contact dermatitis of allergic and irritant types, scalp seborrhoea, folliculitis and Acneiform eruptions. Permanent hair loss is rare and has been observed following misuse of bleaches, permanent waves and straightening products.<sup>[1]</sup>

**Aim and Objectives**

- 1) To study the toxic effects of hair cosmetics on human body.
- 2) To correlate the *Dushi visha* w.s.r to cumulative toxicity of hair cosmetics.
- 3) To highlight on the toxic effects of hair cosmetics on human body in front of society.
- 4) To educate the people regarding the preventive measure of toxic effects of hair cosmetics on human body.

**MATERIALS AND METHODS**

Literature search- Review of literature regarding cumulative toxicity of hair cosmetics is collected from modern science & on different website. Review of literature regarding *Dushi visha* is collected from *Ayurvedic* compendium. Research articles are also searched from various websites. All Compiled matter is reorganized and critically analysed for the discussion and attempt has been made to draw some fruitful conclusions.

### History of hair cosmetics

The word cosmetic is derived from Greek word 'Kosmeticos' which means art of dress and ornaments. FDA defines cosmetics as the substances which are intended to be applied to the human body for cleansing, beautifying, promoting attractiveness or altering the appearance without affecting the body's structure or function.<sup>[2]</sup> In ancient Egypt castor oil and almond oil was used as hair moisturisers for protection from the arid climate. Egyptians also used a fatty substance now known as hair gel to style hair and keep it in place. Ancient Gauls had invented a waxy soap like substance similar to hair wax as a hair styling agent. At around 1500 BC Assyrian king and nobility liked curly hair. To achieve the look they had their hair curled with iron bars heated in a fire, starting a trend that lasts today. In early Renaissance era around 1300s lizard tallow blended with swallow dropping were used as hair gel. Women also conditioned hair with lizards boiled in olive oil. In 1600s

time of Queen Elizabeth I Women would set their hair with lizards. A German chemist named Hans Schwarzkopf developed a water soluble powder shampoo followed by first liquid shampoo in 1927. In 1948, Chase products became the first company to package hair spray.<sup>[3]</sup>

### Types of hair cosmetics<sup>[4]</sup>

- Shampoo
- Conditioners
- Hair oil and serums
- Dry shampoo
- Hair wax/ Pomade
- Hair mousse
- Heat protectant spray
- Sea salt spray
- Hair spray
- Curl enhancing cream.

### Major toxic contents in hair cosmetics<sup>[5,6,7,8,9,10]</sup>

Sr. no.	Content	Product	Use	Toxic effects
1	Sulphates (SLS/SLES)	Shampoo, hair serum, curl enhancing cream	Clean the dirt and excess sebum on scalp	Allergic reaction on scalp. Frizzy hair, hormone disruptors, carcinogenic, liver damage, depression, Eye damage
2	Parabens	Shampoo, conditioners, hair serum	Preservative, prevents bacterial growth	Breast cancer
3	PEG	Hair gel	Thickening agent	Damage scalp, carcinogenic properties
4	Phthalates	hair serum, spray	To increase spreadability, make perfume stick to scalp	Endocrine disruptors, early puberty in girls, reduce sperm count
5	Triclosan	Shampoo	Preservative	Hormone disruptors, accumulates in fat cells. Keeps body in state of toxicity
6	Dimethicone	Heat protectant spray, conditioners, hair serum, hair wax	Acts as protective layer, reduce moisture loss, lubricant, enhance shine	Builds residue on scalp, scalp irritation, clogs pore
7	Retinyl palmitate	Shampoo	Strengthens scalp, boost collagen production for hair growth	Skin itching, redness, scaling, peeling, cancer, reproductive problems, toxicity to organs.
8	Fragrances	Shampoo, conditioner	To provide smell	Cancer, organ system toxicity, reproductive issue or asthma attacks
9	Toluene/ methylbenzene	Hair dye	Colorant	Hamper immune system, cause birth defect, detrimental effect on CNS
10	Resorcinol	Hair dye	To bond dye permanently with hair	Functional disabilities of immune system
11	Selenium sulphide	Anti-dandruff shampoo	Antifungal	Carcinogenic
12	Quaternum-15	Shampoo, conditioner	Antimicrobial preservative	Carcinogenic
13	Talc	Dry shampoo	Absorbent	Cancer, respiratory toxicity

14	LPG's butane, propane and isobutane	Dry shampoo	For itching	Difficult to breath, nausea and headache
15	Phenoxyethanol	Dry shampoo	Anti-bacterial	Carcinogenic, developmental and reproductive issue
16	Cetrimonium chloride	Dry shampoo	Smoothens hair cuticle, detangler	Toxic, irritating, allergenic
17	Alcohol	Dry shampoo	Draw moisture and oil away from scalp	Long term hair and scalp damage, dandruff, dryness and blocked pores
18	Propylene glycol	Hair gel	Prevent moisture from escaping gives glassy and sleek appearance	Irritates scalp, dryness and frizziness
19	Formaldehyde	Hair gel, curl enhancing cream, hair dye, shampoo	Preservative, keeps curl healthy and strong	Itching and carcinogenic
20	Mineral oil	Conditioner	Detangler and conditions hair	Non melanoma skin cancer
21	PVP/VA copolymer	Hair spray	Provides hold factor	Scalp irritation, respiratory issue
22	Ammonia	Hair dye	Colorant	Respiratory and asthma, irritant, potential endocrine disruptors
23	P-phenylenediamine	Hair dye	Colorant	Birth defects, skin irritation, liver and blood toxicity, allergic reaction
24	Triethanolamine	Curl enhancing cream	Adjust pH	Adverse effects on liver and bladder, blister on scalp and parched hair
25	DEA	Shampoo	Thickens the aqueous portion	Cancer
26	Lead	Hair dye	Contaminants	Neurotoxicity

### Conceptual review of *Dushi visha*

*Bhavaprakasa* has classified *Krtrimavisha* into two types. The one which is prepared by non-poisonous substances is called as *Gara visha* & other one which is prepared by poisonous substances is called as *Dushi visha*.<sup>[11]</sup> The word *Dushi* is derived from the root word “*Dusa*” & with suffix “*Nic*” & “*In*”. The word *Dushi* means impure or possessing the property to vitiate.

### Definition of *Dushi visha*

The poison which vitiates *Dhaatus* because of factors such as *Desha* (habitat), *Kaala* (season), food & sleeping during day time is called *Dushi visha*.<sup>[12]</sup> Poison either *Sthavara*, *Jangma* or *Kritrima* whenever not fully eradicated from the body & weakened by anti-poisonous medications or gets dried up by *Davagni*, *Vata*, *Tapa* (the fire, the wind & the sun) or when foresaid natural ten qualities of poison becomes less potent is called as *Dushi visha*.<sup>[13]</sup> Because of its mild strength does not prove fatal for an individual & as it get enveloped by the *Kapha* it be present in the body for many years.

### Explanation on *Dushi visha*<sup>[14]</sup>

It has got two aspects; when *visha* which is capable of producing acute ill effects, is kept for long time, some of them may lose its original properties ultimately gets

converted to low potential *Visha*, which is latent poison. Poison whether *Sthavara*, *Jangama* or *Kritrima* which is not completely eliminated from the body or partially detoxified and being retained or accumulated in the body and localized at various sites of tissues producing cumulative effect is *Dushi Visha*. It can also be called chronic poisoning or latent poisoning. In the chronic poisoning symptoms develop insidiously and more gradually. There is exacerbation of symptoms after the suspected food, medicine and exposure to environment factors like cloudy weather, rain etc. there is remission or even complete disappearance of symptoms on the removal of the patient from his usual surroundings.

### Clinical features of *Dushi visha*<sup>[14]</sup>

The prodromal symptoms of *Dushi Visha* are narcolepsy, a feeling of heaviness of the body, yawning, laxity of joints, horripilation and body ache. One who suffers from *Dushi Visha* will have loose motion, his complexion will be altered, his mouth will emit foul smell, olfactory and gustatory senses will be impaired and he will suffer from unquenchable thirst. Slurring and broken speech, vomiting, sorrow, and sudden bouts of unconsciousness are also seen and symptoms of ascites can be seen. The above symptoms are followed by sense of intoxication after consuming food,

indigestion, anorexia, appearance of red patches all over the body, oedema of the face and extremities, urticaria, fainting, ascites, vomiting, diarrhoea, discoloration, epileptic attacks, intermittent fever and increased thirst.

#### Factors that aggravate *Dushi visha* <sup>[14]</sup>

Polluted land (*Dooshitadesha*), deranged seasons (*Kala*), toxic food (*Anna*) and daytime sleep (*Diwaswapna*) are factors that aggravate latent poison (*Dushi Visha*). Existing latent poison (*Dushi Visha*) can aggravate in the presence of these factors. Commentator *Dalhana* has explained these symptoms in detail.

#### Complications of *Dushi visha* <sup>[14]</sup>

Complications like pyrexia, burning sensation, hiccough, distension of abdomen, impotence, oedema, diarrhoea, fainting, cardiac disorders, abdominal enlargement, insanity, tremors and similar other complications should be treated with the respective remedial measures for the aforesaid diseases by the use of anti-poisonous drugs.

#### Impact of *Dushi visha* on the body

*Dushi visha* produces sense of intoxication after meals, indigestion, anorexia, eruption of circular patches on the skin, urticaria, mental confusion, *Dhatukashya*, oedema on the face & extremities, ascites, vomiting, diarrhoea, discoloration, fainting, intermittent high grade fever & unquenchable thirst. Some poisons produce insanity, abdominal distension, *Shukra Kshya*, muffled voice while other causes *Kustha* & respective disorders of various types.

Today's generation is fascinated more toward westernized life style & hair cosmetics are care materials used to develop the appearance. A wide range of chemicals are used in the hair cosmetics as ingredient, active substances, colorants & preservatives.

#### Ayurvedic management of hair cosmetic toxicity

A patient afflicted with the effect of *Dushi Visha* inherent in the system should be first done *Swedana* and follow the *Vamana* and *Virechana Karma* (detoxifying procedures) according to *Dosha* predominance. After *Kaya Shodhana* (purificatory therapies), daily *Agadapana* (anti-toxic drugs) should be done with *Dushi Vishari agada*. Usually we are identifying hair cosmetic toxicity of immediate nature like Allergic reaction on scalp, hair fall, skin itching, redness, scaling, dandruff etc. Here we can use both internal and external treatment.

#### Ayurvedic herbs used as hair care cosmetics <sup>[15]</sup>

1. *Sikakai* (*Acacia concinna*) - Natural Detergent & Anti-dandruff
2. *Kumari* (*Aloe Vera*) - Cleanser & Revitalizer
3. *Nimba* (*Azadirachta indica*) - Reduces hair loss, Anti-dandruff
4. *Brahmi* (*Bacopa monnieri*) - Hair tonic, Promotes hair growth
5. *Devdaru* (*Cedrus deodara*) - Anti-dandruff

6. *Mandukparni* (*Centella asiatica*) - Darkening of hair
7. *Bhringaraj* (*Eclipta alba*) - Reduces premature graying of hair, Alopecia
8. *Amalaki* (*Embllica officinalis*) - Toner, Anti-dandruff, Protects & reduces hair loss
9. *Japa* (*Hibiscus rosa sinensis*) - Natural Hair dye, Prevent hair fall, Anti-dandruff
10. *Shati* (*Hedychium spicatum*) - Promotes hair growth
11. *Madyantika/ Heena* (*Lawsonia alba*) - Natural Hair dye, Anti-dandruff, Conditioner
12. *Rusmari* (*Rosmarinus officinalis*) - Nourishes, Softens & restores the hair shafts
13. *Arishta* (*Sapindus trifoliatus*) - Natural detergent & Cleanser
14. *Godhuma* (*Triticum sativum*) - Provides nourishment, lubrication & luster
15. *Bibhitaka* (*Terminalia belerica*) - Prevents graying of hair
16. *Tila* (*Sesamum indicum*) - Promotes hair growth, Blackens the hair

#### Ayurvedic drugs used as hair cosmetics <sup>[16]</sup>

##### A) Combination for hair fall

- *Triphaladi lepa*
- *Snuhi dugdhadi taila*
- *Raktagnimantha pushpa lepa*
- *Jambu dvyadi taila*

##### B) Combinations greying of hair

- *Madhuka-Amalakadi lepa*
- *Triphala-loha churnadi lepa*
- *Nili tail*
- *Ayorajadi lepa*
- *Sahacharadi taila*
- *Nimba taila*.

##### C) Combinations for dandruff

- *Priyala bijadi lepa*
- *Nilotpaladi lepa*
- *Malati karviradi lepa*

##### D) Combinations to remove hair

- *Sankha tala lepa*
- *Kusumbh taila Karaviradi tail*
- *Sankha churnadi lepa*
- *Aragvadhadi taila*

##### E) Combinations to make hair black

- *Triphala nilikapatradi lepa*
- *Utpaladi lepa*
- *Bhranga japa pushpadi lepa*
- *Triphala loha churnadi lepa*.

##### F) Combinations for hair growth

- *Goksuradi lepa*
- *Tila amalakadi lepa*
- *Vatavarohadi taila*
- *Dhatryadi lepa*

## DISCUSSION

The relationship between Hair cosmetic uptake and health effects observed elsewhere (i.e. systemic effect) in the body is still poorly understood. These hair cosmetic toxins accumulated in the body frequently produce harmful effects in the body after the certain duration, thus acts as cumulative poisons. As per *Ayurveda Dushi visha* can be correlated with cumulative toxicity. *Dushi visha* shows various types of toxic symptoms & disorders on different systems of the body which mainly includes skin, G.I tract, nervous system and other systems. Hair cosmetics can be embraced under such cumulative type of toxicity. Long term use of Hair cosmetics gives rise to hazardous toxic effect & multiple systemic disorders. By using *Shodhana* and *Shamana chikitsa* along with specific treatment of *Dushi visha* explained in *ayurveda* these disorders can be cured. Natural alternatives for the chemical hair cosmetics are the demand of time in the recent period. Thus use of various herbs described in *ayurveda* that can be used for hair cosmetic purpose along with this natural alternatives for personal care, which do not produce toxic effects to the individual as well as safe for the environment can be beneficial.

## CONCLUSION

The widespread use of Hair cosmetic products is increasingly recognized as a public health issue. *Dushi visha* is a vast concept mentioned in the *ayurveda* classics which can be compared to source of exposure of toxin in Hair cosmetics. People are least aware of toxins they are exposing through Hair cosmetics. There is a great need of application of *Ayurveda* principles of *Dushi visha* in this field. Awareness of the toxic ingredients and utilizing the *Ayurvedic* hair care products will help to reduce the incidence of Hair cosmetic toxicity.

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