

**EFFECTS OF AIR-POLLUTION ON SKIN AGEING**

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**ABSTRACT**

Now a day's air pollution becomes a great trouble in health concern for every individual. *In ayurved, Acharya Charak in Charak Samhita Vimaan sthan* mentioned that "*Vikrit vaayu causes anaarogyam*" (*diseases*). Polluted air is already known to cause millions of early deaths from various diseases and also linked with physical and mental health problems. But it's most visible impact cited on skin. In Ayurveda *Shusrut* has defined seven layers of skin and also described diseases which occurs in those layers. Although human skin is a biological shield against pollutants & chemical, but exposure to high

level of pollution may cause negative effects on skin. Air pollution exposure was significantly correlated to sign of skin aging including pigmentation, age spots and wrinkles. Air pollution contains smog, dust, Particulate matter, UV rays, and free radicals, which can penetrates deep into skin layer and cause long term damage inside the skin cell. From outside it manifest to the aggravation of acne, bacteria, eczema, dryness, dark spots, and premature aging. Certain Contents present in air pollution can damage the collagen fibres of skin which help in healing of skin scars. Due to pollution the scars become more prominent in late ages because of damage of collagen protein. Due to break down of collagen protein symptoms of premature skin aging develops.

**KEYWORDS:** Air-Pollution, *Ayurveda*, *Vikrit vayu*, *Anarogyam*, Skin-Ageing, Pollutants.

## INTRODUCTION

Pollution is the contamination of natural ecosystem by the substances which causes harmful effects to the environment. These substances are called pollutants. There are 3 major type of pollutions 1) Air pollution 2) Water pollution 3) Land Pollution. In these days some other types of pollutions comes under concern such as noise pollution, light pollution and plastic pollution. According to W.H.O.

“If we talk about air pollution it means all type of pollution present in air like polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), oxides, particulate matter (PM), cigarette smoke, smog etc.”. An article about skin and pollution shows skin pigmentation not occurs only because of the process of skin ageing is intrinsic act. As we grow up our skin got aged, the outer layer of skin which is called epidermis becomes thin and the elasticity of skin reduces after that it converted in to wrinkles. Our blood flow reduces due to ageing it promotes pigmentation<sup>[1]</sup> according to *Sushrut* the seven layers of skin are 1<sup>st</sup> is *avabhasini* it expresses all *varna* (colour) illumines the five kind of *chaya* (Shadow of colours/complexion).the thickness of *avabhasini* is of 18 part of *vrihi*(paddy/Rice grain) and is the seat of *shidhma* and *padmakantaka* (kind of skin disease). 2<sup>nd</sup> is *Lohita* (reddish) which is 16 part of a paddy / rice grain in thickness and is the seat of *tilkalak* (mole), *nyaccha* (blue spot like mole) and *vyang* (wrinkles), 3<sup>rd</sup> is *Shweta* (whitish) is 12 part of paddy / rice grain in thickness, it is the seat of *charmada*, *ajjgallika*, and *masak* (types of skin diseases), 4<sup>th</sup> is *Tamra*(coppery) is eighth part of rice grain in thickness and is the seat of many kinds of *kilas* and *kushth* (skin disease),5<sup>th</sup> is *Vedini* (understands sensation of pain), is 5 part of rice grain in thickness and is the seat of *kustha* and *visarpa*, the 6<sup>th</sup> layer is *Rohini* is equal to 1 grain of rice in thickness and is the seat of *granthi* (benign tumour), *apachi* (cervical lymph adenoma), *arbud* (malignant tumour), *shlipad* (Filariasis) and *galagand* (cervical lymphoadinitis), 7<sup>th</sup> is *Mansadhara* (supporter Of muscles) is equal to 2 grains of rice in thickness and is the seat of *bhagandra* (fistula in – ano), *vidradhi* (Abscess) and *arsha* (Piles).<sup>[2]</sup> According to modern science there are three main layers, epidermis, dermis, subcutaneous.<sup>[3]</sup> The layer which mostly affected by pollutant is *avbhasini* because it is the outer most layer of skin. There are so many air pollutants which are responsible in skin ageing. They are ultraviolet radiation, polycyclic aromatic hydrocarbons, cigarette smoke, traffic pollution, oxides etc. Air pollutants may causes severe interference of regular functions of lipids, DNA and proteins of the human skin via oxidative damage. It leads to

skin ageing, inflammatory or allergic condition such as atopic dermatitis, acne, psoriasis and skin cancer.<sup>[4]</sup>

**Ultraviolet radiations:** It is a sharp factor for increasing skin ageing because sunlight is the main source of ultraviolet rays. *Aacharya Charak* described long time exposure of skin in sunlight as a cause of *Kustha* (skin diseases).<sup>[5]</sup> American Cancer Society tells in an article that ultraviolet rays destroy the DNA of skin and further cause cancer. Sunburn or tanning is the short-term result of sunlight exposure.<sup>[6]</sup> Ultraviolet radiation plays an important role in skin ageing. There are different types of ultraviolet radiation. Ultraviolet A is the main cause of photo-ageing. Ultraviolet B is responsible for sunburn. Long period exposure in sunlight can cause elastosis, keratoacanthomas.<sup>[7]</sup>

**Polycyclic aromatic hydrocarbons:** Polycyclic aromatic hydrocarbons are among the most extensive and harmful organic pollutants. These are related to extrinsic skin ageing, pigmentation, cancer and acne formation.<sup>[8]</sup> These are organic compounds. In which so many compounds are colourless, white or pale yellow solids. They have different toxic effects on different organisms.<sup>[9]</sup>

**Cigarette smoke:** Cigarette smoke causes premature ageing which clinically shows as deeper periorbital wrinkling.<sup>[10]</sup> An article study shows that heavy cigarette smokers are 4.7 times more likely to have wrinkles on their face than non-smokers, freely exposed to sunlight.<sup>[11]</sup>

**Traffic pollution:** In some big cities of the world, air pollution is a primary cause of skin ageing. Traffic pollution is also becoming the most toxic substance for skin.<sup>[12]</sup> An article in *Bio Med Research International* published about traffic-Related Air Pollution shows in their study that traffic-crowded roads are likely to be at a big risk for atopic eczema with increased weakness.<sup>[13]</sup>

**Phototoxicity:** Maximum phototoxic reactions are caused by drugs like tetracyclines and chlorpromazine. These phototoxic reactions are inflated by sunlight and toxic agents (pollutants).<sup>[14]</sup>

**Prevention:** There are so many things to prevent early skin ageing. When it comes to pollution, we have to take care of some points. It can be prevented by some general and specific ways, like in general, stay away from dusty, crowded traffic areas. Use cloth for covering face or exposed body parts. Drink plenty of water, eat rich anti-oxidant, vitamin

C and vitamin E diet. We can also slower the rate of skin ageing by adopting some specific ways. Now a day so many cosmetics in market are available. Protect your face from sunscreen of SPF 30, it acts as a barrier between skin and pollution or ultraviolet rays. Some products are containing vitamin C and E which help in building collagens and combats hyperpigmentation.<sup>[16]</sup> Simple changes to your skin routine such as suitable cleansing and use of antioxidants daily can have a big positive impact on skin.<sup>[17]</sup>

## CONCLUSION

So it is clear from the above article that air pollution is a main factor in production as well as aggravation of numerous skin diseases. It's seen that human even at individual level is not aiding any help to control air pollution. Simple campaigns and rallies alone will not decrease this air pollution but our sincere efforts will not only save us but also the world. In Ayurveda pollution is co-related with *dushi vish* which harms our body when it is present in our body for a long time, so for this we should use the basic concepts of Ayurveda in which different kind of yoga, pranayama, *agad*, and *rasayanas* are mentioned to improve our health. By *panchkarma* we can detoxify our body, in diseases like acne and different kind of dermatitis through *karmas vamana* and *virechan*. So it's should we our primary focus firstly to avoid contamination through uses of *rasayans* (anti oxidants), green vegetables, fresh fruits, purifying our body through *panchakaram* etc. else well will leave ruined world for our coming generation.

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