

## A STEP TOWARDS OVERCOME AUTOIMMUNITY; LICHEN PLANUS TREATMENT AND MANAGEMENT

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### ABSTRACT

*Human survival, since time immemorial is always being a struggle to overcome challenges of day to day life. Human body is an amazing, hyperphysical gift of nature which consists of different astonishing components whose formation starts from atoms to microelements, ends up forming the whole body which is as beautiful as it seems like nature has gifted the world with one of its most precious ornament from its treasure, it is our responsibility as well as every ones wish to be healthy and beautiful by body and protect it from day to day invaders that intrudes our biological system in order to harm us. It is our prior duty to protect as well as take care of it, as we are well known with the Physiology of human body, it is really astonishing, how wonderfully our body has different compartments for different functions, they are called organs and are specialized to well perform their particular duties, eg; kidney's function to clear out nitrogenous waste from our body, so our body has a pair of it, similarly heart pumps the blood to the circulation so it does that without taking any rest. These are different functioning system, i.e; organ system, made up of organs functioning in coordination that in turn is made up of the tissues which are the collection of similar kinds of cells working in aggregated coordinative manner to maintain the bodily functions that are essential for human survival.*

*No doubt that physical body is itself seemingly similar to, sort of a city or a village which has everything of its own there are boundaries that protect it from external environment, that is no other then the most important organ ,the Skin, the largest organ; there's other organs like lungs which give air for the survival, likewise the trees do to locality or village, far more things are there which is very fascinating, surprising and also can be considered as wonderful. No doubt the bodily village is sovereign or independent but at an equivalent time it's to take care of friendship and maintain synchronization with outer world also for that it's to be in mutual relation with microorganism, e.g; normal flora residing in our intestine helps us in some ways or the other namely; lactobacillus. Till now the story is extremely pleasing but what if some outer living organism come to harm us then our biological system must have certain cops to assist the cells and organs which are infected, and punish or finish the intruder.The organism which comes or enters our biological system so as to make its benefit or fulfill its requirement and successively harm us is understood as pathogens.*

Nothing to worry about in above regard, nature has also gifted us with **immune system**, whose role is to protect us from day to day intrudes that harm our bodily functions even at cellular, molecular as well as at biochemical level. The most important example of the guards present at the boundary here, immune cells present at skin, which catches the intruder and punishes them, it is a part of immunity which does so in order to protect our body from antigens. The immune system has two arms the **innate arm** and the **acquired arm**. The innate arm serves as the first line of defense and acquired arm is the second line of defense. The first

line of defense consists of cops in form of cells, loaded with chemical weapons in order to punish or finish the intruder, depending upon the situation in question.

*This is the normal activity of defense mechanism namely; immune system, but what if these protectors forget their identity, and differentiation between self and non-self then here starts the sad part of story where the army of the country or village starts killing its own innocent people, similar with the immune system who has forgotten whom to kill and whom to protect and starts harming its own body cells, tissues and organs etc. This is the most unacceptable, sad and drastic condition known as **Autoimmunity**, immunity against itself or own biological-system.*

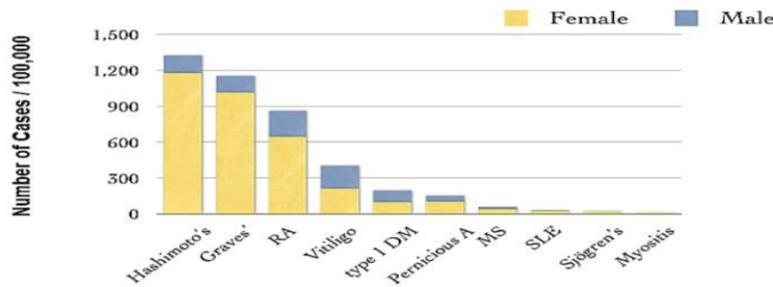
**KEYWORDS----- AUTOIMMUNITY, OVERHANGING IMMUNE SYSTEM, LICHEN PLANUS.**

### **Introduction:-**

Through this abstract I would like to convey a message about the condition of autoimmunity which could be mild as well as severe this is totally a kind of illusion faced by our specialized immune system which fails to respond in correct way instead it starts harming itself. Without much adore, I could first quickly reveal all the data and statistical graph about Auto-immunity, there are not less than 23.5 millions of American, more than seven percent of its total population is suffering from the autoimmune diseases and nothing to be sophisticated about that it would not affect much of the population, the data shows that it is raising day by day, as it is seen that in America, U.S.A. alone has eight million people who have auto-antibodies [these are molecules whose presence predicts the occurrence of autoimmunity].

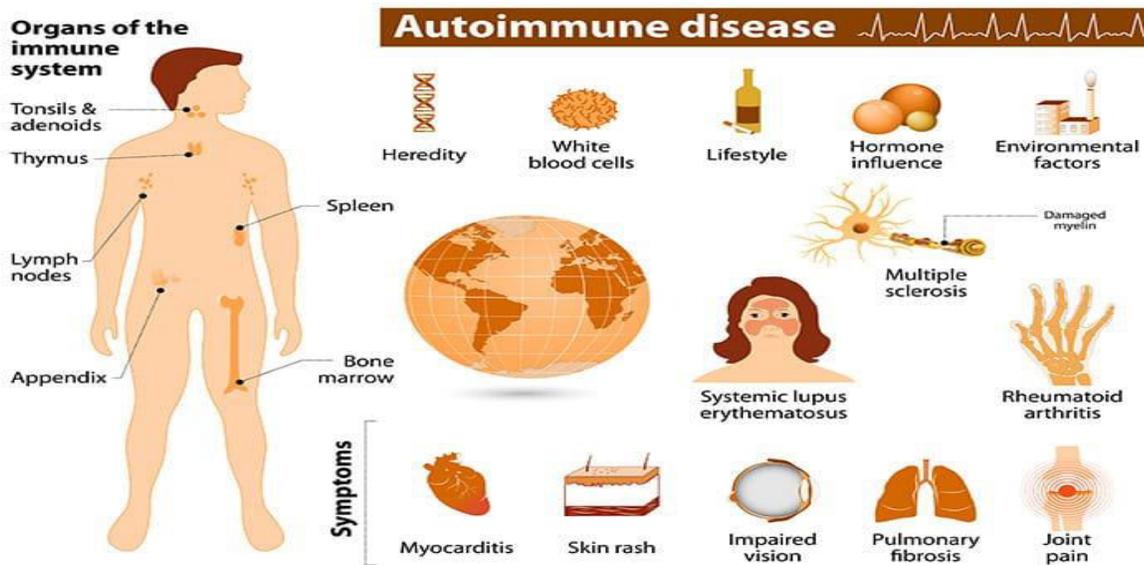
<b>DISEASES</b>	<b>PREVELENCE OF PERCENTAGE OF PATIENT SUFFERING FROM THE DESEASE.</b>
<i>All cardiovascular diseases</i>	<b>20%</b>
<i>Type II diabetes melitus</i>	<b>15%</b>
<i>All cancers</i>	<b>4%</b>
<i>Obesity</i>	<b>34%</b>
<b>SURPRISINGLY ALL AUTOIMMUNE DISEASES</b>	<b>3%</b>

**Data 01 :-** *A numerical data showing percentage of people, across the world, suffering from different disease.*



**Figure 01 :-** showing no. of cases of autoimmunity

Autoimmunity ranges from very mild allergy to severe rheumatoid arthritis, it could cause death also if not treated at correct time, but the sad part of story is that till now the causes as well as the treatment both are not so robust and clear, reasons of autoimmunity is still a mystery it is thought to occur due to unusual immune response or due to resemblance of normal body cells with any pathogens against which immune response is triggered. Likewise treatments include immunosuppressive drugs that could dampen the immune response and at a particular extent that makes the immune cell to be suppressed so that the cells and organs of patient's body could be saved to some extend and at least they could be saved from the unnatural painful death.



**Figure 02 :-** A pictorial preview of autoimmune diseases; showing causes, symptoms and potent areas to be affected.

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We being reader or researcher could have always been came across several news which has been reported in papers and articles that most affected countries with auto-immunity across world are Israel, USA, Netherland, and Sweden, where one of the severe reported unnatural deaths are from autoimmune diseases, the most fascinating and surprising thing behind the above data is that all these countries are developed in terms of medical sciences and researches. We are now in the world where researches are going on to overcome the challenges of killing intracellular pathogens like virus or some bacteria of genus mycobacterium eg; Mycobacterium leprae, we are at the time zone where we are planning to conquer over HIV [Human Immunodeficiency Virus] causing AIDS [Acquired Immunodeficiency Syndrome], apart from all these what is so mysterious about autoimmunity that it's still not profoundly cured.

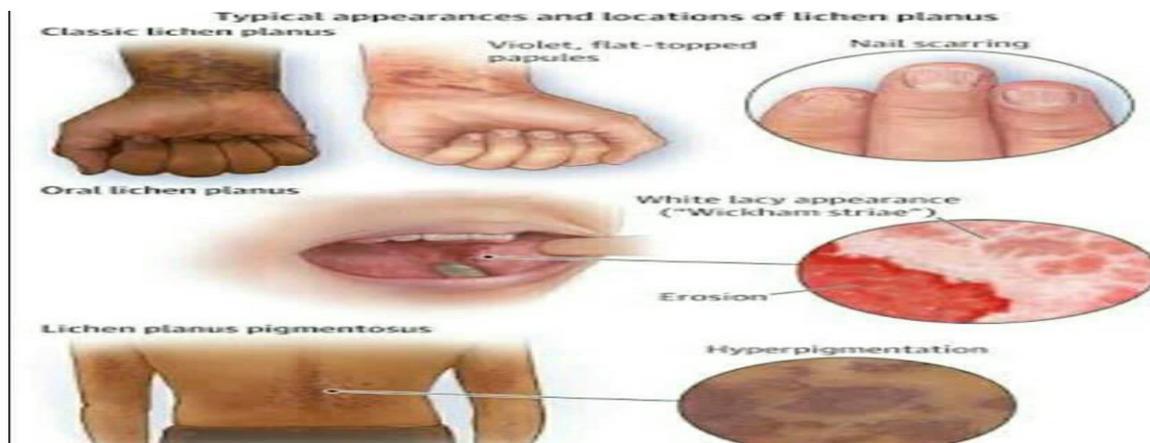
The autoimmune diseases; apart from rheumatoid arthritis , Systemic lupus, Diabetes type I etc there is an often occurring disease namely Lichen planus, it is not rare now a days, at early stages its seems more likely as normal inflammatory eczema which shows no response for anti-bacterial, antifungal as well as other skin creams usually dabbed at the time of normal inflammation, not surprisingly why should it give positive results over applied ointments or orally taken drugs that are not there real treatment.

Here, in this abstract apart from histology and pathophysiology, a medicine of an autoimmune disease will be discussed about a particular autoimmune disease namely lichen planus. According to **British association of dermatologists**, *lichen palnus* is:-

*"A FAIRLY COMMON ITCHY, NON-INFECTIOUS RASH THAT USUALLY OCCURS IN ADULTS OVER THE AGE OF 40"*

The word lichen planus is derived from a Greek word Lichen, meaning "small bumps" or "tree moss" and planus, meaning "flat" so literally lichen planus are small bumps which seems flat tree moss.

They may range from itchy eruptions to white lines called wickam's striae. These itchy eruptions may occur at wrists, ankles, genitals, scalp, and mouth of oral cavity, it is papules that is shiny purplish blue colored flat topped rashes.



**Figure 03** :- *lichen planus* at different places of body showing the presence of disease and denotes appearance.

Lichen planus is an autoimmune disease which commonly occur to the elderly people of age above 40, but it would not be wrong to say that now a days it's common among people of young age too.

Oral lichen planus is very common amongst young age people too, it is a chronic disease which is non-infectious/non-contagious and have tendency to reoccur, it occurs due to chronic inflammation and are obstinate in nature, can effect areas like skin, mouth, or genitals. Lichen planus is of many forms or it can effects to different body parts like:-

- Oral lichen planus, occurs in gums, tongue, palate and other areas of mouth
- Cutaneous lichen planus on skin.
- Lichen planopilaris
- Lichen planus on nails.
- Mucosal lichen planus.
- Lichenoid drug eruption.

The cause are still not so clear, apart from all classical or conventional causes which have been reported, this abstract is going to deal with the inflammatory perspectives as a primary suspect of disease. Then the abstract will focus the ointment as well as oral intakes and also this would help to get rid of the disease.

Let's see the reason of the disease in general:-

- Genetic predisposition
- Stress at physical and also the mental stree.
- It would appear as a result of isomorphism, means that disease would occur to areas where injury has occurred.
- Here liquificative degeneration of the basal layer of the epidermis occurs.
- It is characterized by formation of band of inflammatory cells just beneath the epidermis.
- Decomposition of millenin pigments beneath the epidermis.

General treatment of the disease includes:-

- Corticosteroids capsules.
- Ointment of clobetasone propionate
- In some cases dapsone is given which is used to treat leprosy.
- Calcineurine, used to treat eczema other skin lesion
- Skin whitening agents.
- And if these doesn't works finally lesion is removed by lazar treatment.

These are general treatment favorably provided to treat the disease if recognized at mean time these treatments are although effective no doubt but have several disadvantages I could not be saying these dam confidently if I myself would not have been the sufferer, unfortunetly I myself have skin lichen planus, of which I have completed 3 years complete course of corticosteroid treatment which lead to several metabolic alterations in the body, these are; during the treatment body became overweight due to cushioning effect of corticoids, menstrual cycle was totally disturbed that led to several other problems, like raised body temperature, unconsciousness, laziness, fatigue etc.

**Table 4. Treatment of Nongenital Cutaneous Lichen Planus Lesions**

Treatment	Dosage	Comments	Cost of generic*
High-potency topical corticosteroids	Administered twice daily	First-line therapy	\$12 to \$68 for 60 g
Oral corticosteroids (prednisone)	30 to 60 mg daily for three to six weeks, then dose is tapered over the next four to six weeks	For severe, widespread lichen planus	\$16 to \$20 per month
Phototherapy	30- to 40-minute treatments, two or three times weekly	For severe disease; narrow-band ultraviolet B is preferred over psoralen plus ultraviolet A	—

NOTE: Acitretin (Soriatane) is used in more severe cases of cutaneous lichen planus that do not respond to topical treatment; this is an off-label use. Referral to a dermatologist is warranted for patients requiring systemic therapy with acitretin or an oral immunosuppressant.

\*— Estimated retail price based on information obtained at <http://www.drugstore.com> (accessed February 22, 2011).

**Table02 :- Showing typical preferable treatment of lichen planus.**

The abstract is restricted to its discussion on the immunological perspective of cutaneous lichen planus, an approach towards its treatment. For the whole view of skin lichen planus, we have to look at the structure of skin in brief and various immune cells, which start degenerating the normal skin cells and deposits them as leathery mass, which appears violet in color and is conspicuous mass, sometimes appears polygonal.

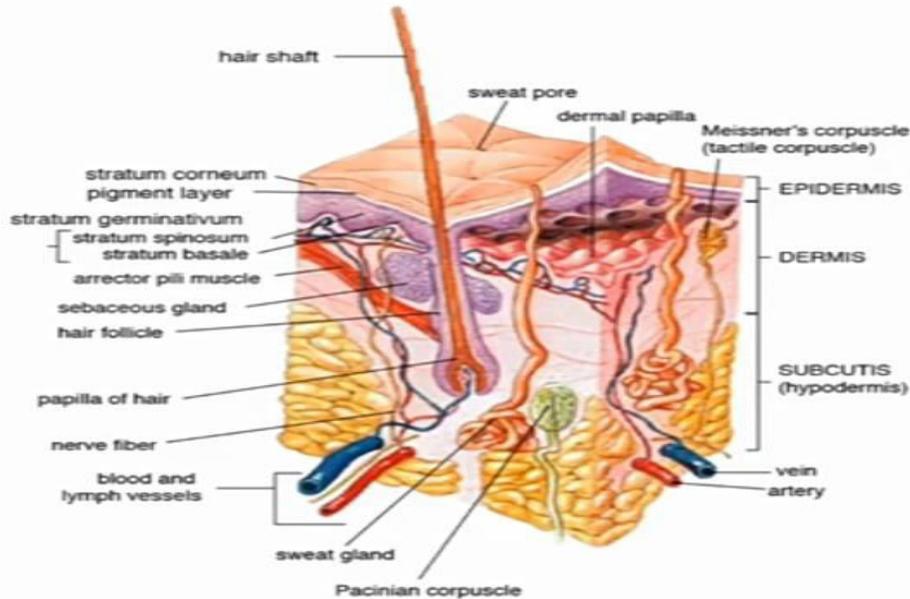
Let us very quickly see the different layers present in the skin, under close observation we would find that skin has several layers and its divided into basic 3 types of layers, on the basis of function they perform, **epidermis**; the outer layer having keratinised squamous epithelium cells which are stratified too they are basically responsible for pigmentation, **dermis**; the middle one, and **hypodermis or subcutaneous layer**; the innermost layer. Anything that is visible on the skin does not randomly appears it leads to a cascade of reactions of cell signaling[flow cytometry] takes place in that, taking forward an example of mole that are very common and can be of same pigmentation as skin or of different color.



**Fig 04:-** showing 1<sup>st</sup> row different stages of pigmentation loss and mole growth, 2<sup>nd</sup> row showing two differently pigmented moles [black or grey, left; white, right].

Mole can be considered as conspicuous mass of dividing cell, though not harmful, thus called benign. This could be related to lichen planus because if we carefully get inside the histology of mole we will find that they have also started initiation from inner mass of skin cell the difference is mole is an outgrowth where as lichen planus is a graveyard, or battle field where self cells kills or attack there own member.

Let us see different layers of skin in figure and the possible change that occurred during lichen planus.

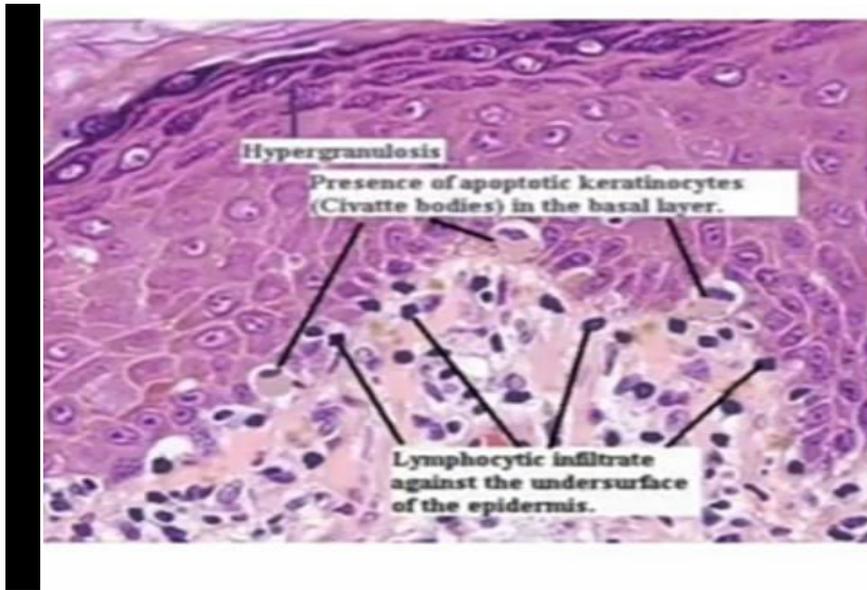


**Figure 05:-** different layers of a part of skin.

There are certain types of changes in the layers of skin that occurs in lichen planus and these changes are clearly seen and can be marked. Here in case of lichen planus the immunological cells become deformed and this is due to lymphoid tissues. The response could be due to cells of immune system which has been triggered against self cells.

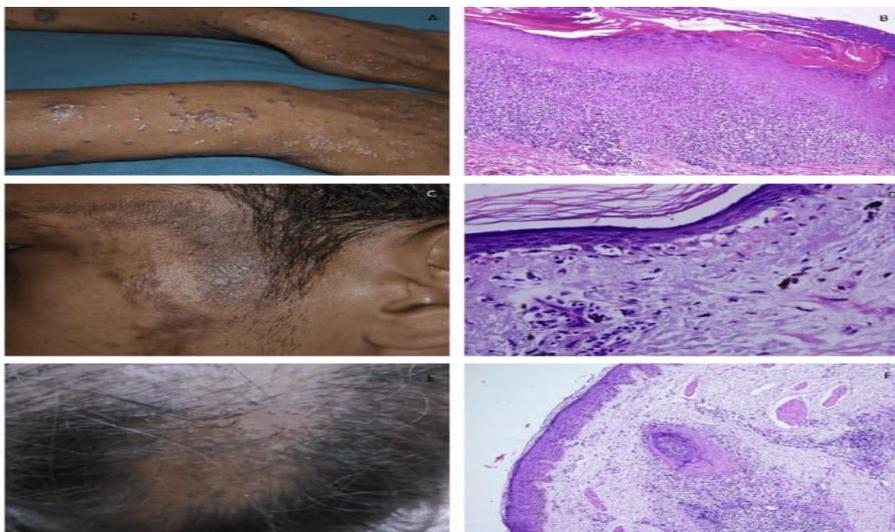
This response has started from hypodermal layer of skin cell which has been recognized as antigen, it could be due to similar resemblance of self-cells to any antigen, that ever encountered by immune cells. This could only be seen as a potential reason of lichen planus.

As in the picture below it can be clearly seen that the layers of skin is undertaken or filled with numerous cells of immune system likewise lymphoid cells and mast cells, thus creates a mass of lathery appearance which ends up to outer layer by the passage of time and finally it appears as pigmented mass of kept mosses on the skin popularly called as lichen planus.



**Fig 06:-** showing lymphatic infiltrate against underlying surface of epidermis and this makes the visual changes in skin seen as lichen planus.

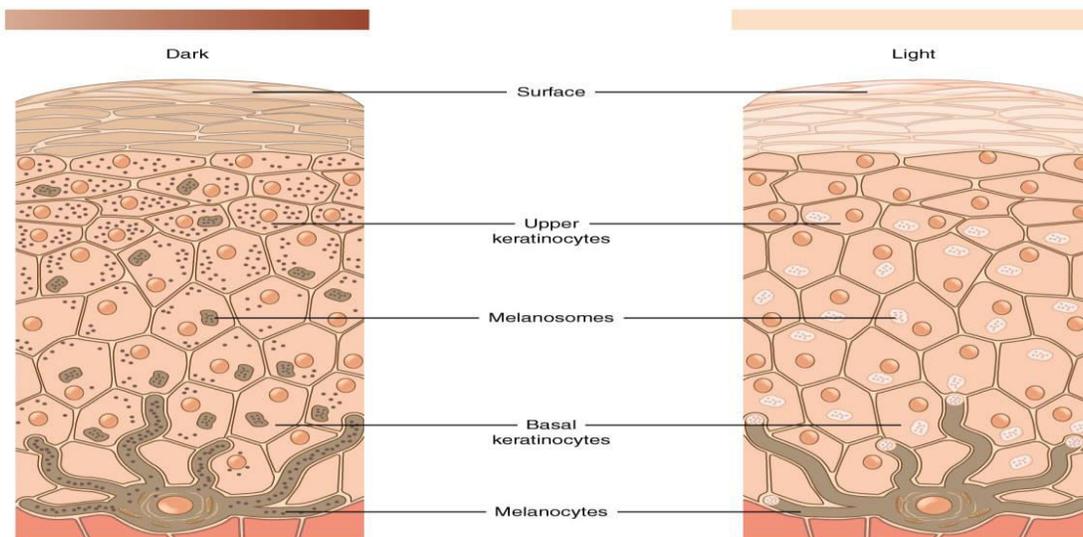
This changes results in the ever seen consequences of the disease which is depicted in the fig below.



**Figure 07 :-** Showing the disease affecting three areas of the human body , first photo is the hands which is affected and adjacent to it is its skin histology, second picture is the area of face and its histology is shown adjacent to it and third picture is of scalp area where the hairs is lost, can be seen clearly , this occurs due to the the mass of cells which has been triggered in response to autoimmunity. This was the histological perspective why the cells accumulates and does not let hairs to grow.

Now, by the means of abstract I would like to communicate two things, **first** is how does pigmentation occurs lead to the appearance of skin lesion and **second** how would the cells being accumulated at skin layer. And at the end I would introduce a medicine that has potential capacity to cure this disease.

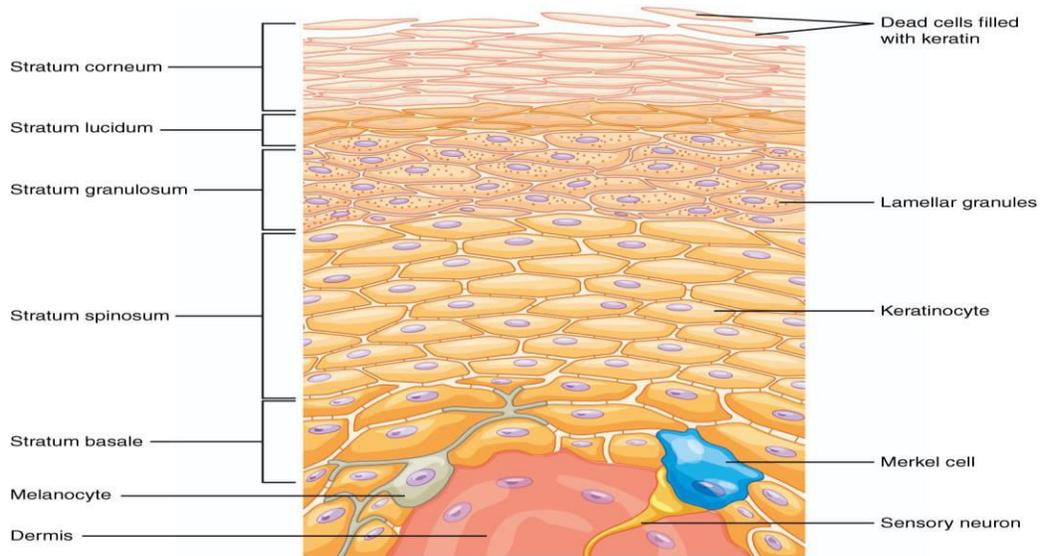
Let's see first how does the extra pigment gain has occurred, this answer is shown through the fig below and it is not to be surprised that it is no other then melanin that decomposes as a huge amount, similarly as in case of mole where melanin secreting cells, melanocytes, became huge monsters called melanoblastoma cells, that could further divide endlessly, not to worry because it's totally benign in case of mole. In case of a typical skin lichen planus melanocytes are also attacked by immune cells and leakage of melanin and further deposition of melanin occurs and macrophages which have the tendency to encapsulate the intruder or anything that resembles the intruder/antigen.



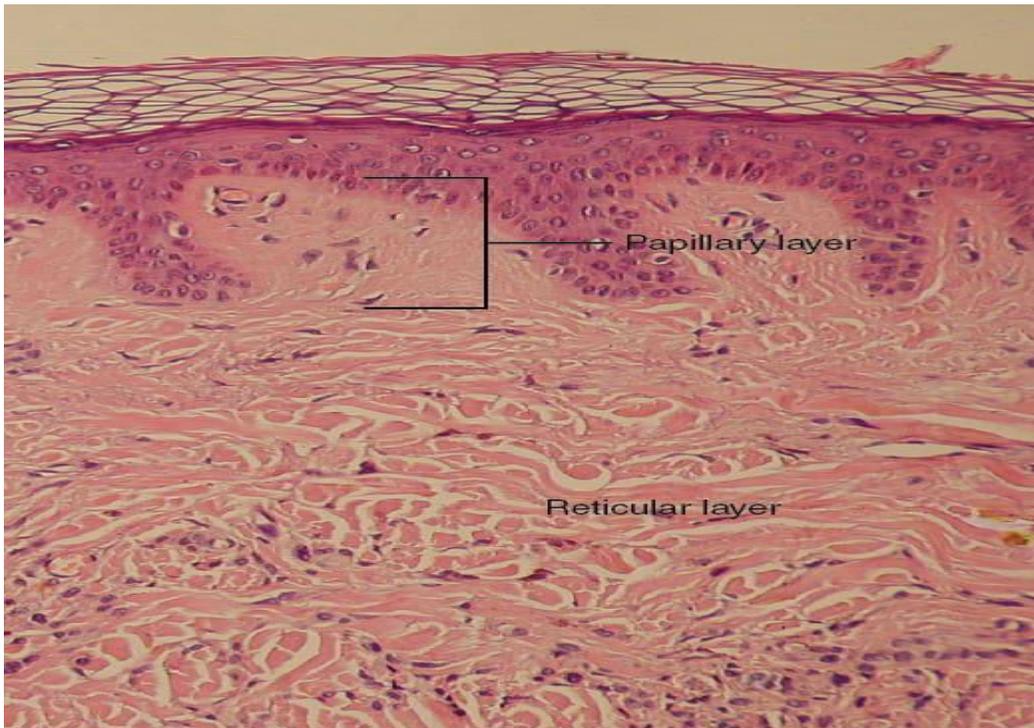
**Figure 08:-** *the pigmentation deposition occurs due to light and dark.*

In case of lichen planus, due to life styles or life in equatorial region/cold or hot area residing people the pigmentation becomes virulent at some portion of the body and that pigments become encircled by numerous mast cells, the macrophases of skin, that forms conspicuous mass of cells. These cells continuously driven upward by the passage of time when the epidermal cell are exfoliated and are renewed while at the same time the mass of cell goes up and this leads to symptoms on skin as skin lesion.

Epidermis has five layers and it's layers are divided on the basis of cells type they consist of. The upper layer is the keratinised and are easily exfoliated by means of chemical or physical methods and this leads to the upward outcome of pigmented mass of cell that is seen as the disease.



**Figure 09:-** showing different layers of epidermis



**Figure 10:-** showing conspicuous mass formation.

The immune cells which forms the armed force of our body gets triggered in presence of antigens, in a normal condition, and are under supervision and action until they are fully satisfied, these cells works into synchronization with each other in order to eradicate the antigens but in case of autoimmunity these cells are misguided and triggers the everlasting response against its own body.

Vitamin A is a potent drug which could show its wonderful effects to control cytotoxic T-cells and this could potentially check the autoimmunity. The second approach is to eradicate the skin lesion, formed anywhere this could be potentially treated, when turmeric paste or essential oils of turmeric along with vitamin E capsules, [one capsule of vitamin with every table spoon of turmeric], this can serve as potential medicine and ointment that could eradicate skin lesion of lichen planus.

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## CONCLUSION:-

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The abstract deals with various perspectives of lichen planus , an autoimmune disease , that forms plaques on skin and are reoccurring. Here several perspectives are dealt to means how the cells beneath the skin layers get damaged and its effect is seen over skin. My approach is to beat the this skin problems with easy medication.

These immune cell masks the pigment of melanocyte and thus the skin lesion are appeared and these could be eradicated by the medicine and ointment mentioned in the abstract, with this hope that it would work on the disease as well as will not let it appear again.

Here I might wish to end the abstract by a message that shows, other sort of disease are found to be controlled by medicines since they are against foreign antigen case of the other infection, but in case of autoimmune disorder, where own immune cells are triggered and become virulent against own biological system's cells, tissues, and organ, this results in overhanging immunity, that's highly activate immune system which harms our own body. Whatever medicinal prescription made in the abstract is at all not going to harm the metabolism of body like other treatments of autoimmunity including corticoids.

This was all about the content or collection work for the welfare of humanity and this abstract is written with the hope that it would work for human for their benefit in regard if lichen planus skin intrusion.

Thanking you

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