

# Understanding skin acne

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# Acne

- Acne is considered to be a **metabolic syndrome** more than just a topical issue. It is caused by an overgrowth of P acne bacteria.
- The amount of P acne on a patient with acne vs that on a patient without acne is actually the same.
- **In an acne patient the sub species of P acne are different.**

# What happens in Acne

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- The P acne grows using excess sebum
- It releases lipases, lipoteichoic acids, peptidoglycans, cell surface molecules such as CAMP
- these activate toll receptor 2 and the innate immune system, IL8 and TH17- induces inflammation.
- These factors are haemolytic causing redness and swelling in acne.
- Hyaluronidase releases and breaks down the extracellular matrix allowing the acne to spread. This also leads to scarring.

# Factors causing acne

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- Increase in P acne subspecies 1Ai overgrowth
- An increase in follicular hyperkeratinisation which traps sebum and causes comedoes to form
- An increase in insulin resistance which increases IGF1 and mTOR which increases sebum thickness and leads to inflammation of the pilosebaceous unit.
- IGF1 blocks FoxO1 and activates mtorc1 (increases hyperkeratinisation) which drives inflammation of the pilosebaceous unit and its hypertrophy.
- In adult women increased androgens can worsen acne due to DHT elevations

# Usual treatment options

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- **Isotretinoids** - side effects such as increased liver function tests and also hypertriglyceridemia, it can also be teratogenic and hence patients are advised against pregnancy
- **Topical antibiotics** are also used in mild acne such as minocycline, (these can cause overgrowth of bacteria such as pseudomonas on the skin and can cause bacterial resistance)
- **Oral antibiotics** which are also used for acne can cause recurrent resistant respiratory tract infections along with fungal infections.
- Dandruff worsens acne overgrowth and hence all dandruff must be treated. Lactobacillus rhamnosus and bifidobacter when taken orally reduce the virulence of acne.

# The usual adult acne treatment

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- ❑ **topical dapsone gel**
- ❑ **combined oral contraceptives**
- ❑ **oral spironolactone**
- ❑ **oral metformin** (for PCOS cases with high insulin, metformin can reduce androgens).
- ❑ In lactating women or pregnant women we can use **topical azelaic acid, erythromycin or benzyl peroxide**.

- The main issue in adult acne treatment comes when the patient has high triglycerides, liver disease or hypertension or wants to get pregnant; the PCOS cases also start having limited options in treatment.
- Most of the time adolescent acne is easy to treat with isotretinons but adult acne becomes difficult, since more women than men have acne there is a need for safe and effective acne treatments.
- Other drugs like topical ivermectin or adapalene are also useful.
- Reducing insulin resistance with imusil, leptin resistance+ akkermensia is very helpful in acne resolution.

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## Treatment using homeopathy and low dose medicines



# TREATING ACNE

Many causes of acne but treatment can be done simply using a few remedies such as

- ❖ Lycopodium - Acne from high SNS, hot sweaty patient with burping and bloating
- ❖ Arnica - Reduces inflammation of the pilosebaceous unit, useful in hard indurated acne
- ❖ Pulsatilla - thirstless patient with acne which itches and better on cold application, worse on fatty food.
- ❖ Sulphur with morgan pure - acne with burning on the face and red acne which is better on cold application.

- ❖ Musca - Useful in all types of acne
- ❖ Nat Mur - Useful in acne with oily skin
- ❖ Mag Sul - Useful as an aid to reduce redness in acne
- ❖ Spongia Tosta - Useful in black heads
- ❖ Tuberculinum - Useful for acne on the nose
- ❖ For acne with pus can use Hepar Sul + Cal Sul + Kali Sul + Gunpowder

- ❖ For acne during puberty – Astreria Rubens can be used as an add on remedy besides the others
- ❖ For acne during menses - Arnica with Kali Bro
- ❖ Use the remedies in 30c and dose as usually 4 drops once or twice a day.

- Topically we can use Tocyen to block both Androgens, Igf-1 and also increase Keratinocyte turnover.
- In case the patient flares up with Tocyen the second line is to ask patient to simply make a paste of pomegranate seed powder in water and use at night.

# TREATING HORMONES

- ❖ In acne blocking DHT is essential.
- ❖ Easy way is to use Cinnamon Extract Low Dose which blocks DHT
- ❖ Patient may also have hair fall due to high DHT, we can also use Zincum Aceticum 3x if Zinc is low or Alkaline Phosphatase is low.
- ❖ The free Testosterone may be low in older males due to high sex hormone binding globulin, we can block SHBG by using Boron 6mg twice a day. In males it reduces estrogen and increases testosterone while in women it increases estrogen and testosterone both.

# TOCYEN BEAUTY CREAM

**The only cream you'll ever need**

## TOCYEN BEAUTY CREAM

Skin care for men and women who are on the go



# THE CONCEPT

- ❖ To develop a single face cream that be used both day and night, it should safe enough for babies as well as for adults, it should be able to remove pigmentation, treat acne and acne scars, work an an anti-aging cream. It should be effective in both oily and dry skin types at the same time
- ❖ It should also help remove the itch of keloids and scars
- ❖ Reduce varicose veins or spider veins
- ❖ Treat corns and hyperkeratinized skin such as in atopic dermatitis

# THE PRODUCT

- ❖ We developed the cream using 16 natural active ingredients such as resveratrol, saffron, sandalwood, gotu kola etc which increase keratinocyte turnover and also improve collagen and elastic levels while reducing fine lines and wrinkles
- ❖ In babies and children it is being used to remove post insect bite hyperpigmentation
- ❖ In geriatric patients it treats their dry skin
- ❖ In adolescents it resolves their acne and acne scars.
- ❖ In adult acne it treats the “u” zone acne without requiring any birth control pills or spironolactone or topical tretinoin



# What makes it so special in acne?

❖ In adolescent acne typically isotretinoids and topical antibiotics are used, the isotretinoids are very useful but cant be used in those with high cholesterol such as PCOD patients and are teratogenic and hence cannot be used in women who want to get pregnant. If oral antibiotics are used they can cause drug resistance and increased rates of respiratory infections.

# What makes it so special in acne?

- TOCYEN works by removes the keratinocyte hyperkeratinization which removes the trapped sebum, it has no direct actions on the acne bacteria, it reduces the inflammation by reducing the redness and inflammation around the acne, it blocks IGF-1 and hence reduces acne due to metabolic syndrome and also blocks mTOR which further reduces inflammation.
- It also removes post acne hyperpigmentation by treating the residual inflammation.
- It treats acne at the same speed as normal treatments for acne which is around three months but in a gradual and gentle manner without causing skin irritation or damage to the liver and treats old acne scars as well.

# What makes it so special in pigmentation?

- ❖ Pigmentation can be due to intrinsic factors such as ageing which creates oxidative stress, low B12 which increases melanin formation, toxic metal exposure such as mercury, diabetes or hormonal changes like in melisma or from extrinsic factors such as UV and pollution damage or even damage caused due to other agents such as hydroquinone which can cause onychosis.

# What makes it so special in pigmentation?

- Tocyen reduces melanin formation by 90%
- It reduces pollution induced skin damage by upto 47%
- Its total antioxidant potential is at 125% which is more than any product including vitamin C itself.

It does not block tyrosine kinase unlike the other antipigmentation products. Thus it is safe since if a product blocks tyrosine kinase it will cause an increase in skin inflammation via th17. This is why most anti pigmentation products can inflame skin.

# What makes it so special as anti-aging product?

- ❖ Tocyen increases collagen and elastin by about 13% and 8% per application while simultaneously blocking MMP1 gene
- ❖ It also increases aquaporin 3 gene expression by 20% per application and it hydrates the skin and reduces matrix breakdown to help improve fine lines and wrinkles.

# What makes it so special as anti-aging product?

- ❖ Due to its resveratrol content it actually increases sirtuin gene expression in the basal cell which actually makes the skin young
- ❖ Agents like retinol or glycolic acid are skin peels and don't actually make skin young,
- ❖ Tocyen does not thin out the skin and gives a glow and radiance to the skin.



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**Anti ageing  
benefit**

## Evaluation of effect of TOCYEN on **Collagen** gene expression modulation in Human Dermal Fibroblast (HDF) cell line

Test Sample	Regulation in Terms of Folds- Collagen
Cell Control (Untreated)	1.00
Tocyen cream 500µg/mL	1.11
Tocyen cream 1000µg/mL	1.13

- In the gene expression study, the Tocyen cream at tested concentrations **showed moderate increase in the level of Collagen gene expression** as compared to the untreated control in the semi-quantitative RT-PCR procedure.
- The results indicate that Tocyen cream has the **potency to increasing the Collagen levels** in Human Dermal Fibroblast (HDF) cell line.
- The Tocyen cream exhibited a CTC50 value of above 1000 µg/mL on the Human Dermal Fibroblast (HDF) cell line. (Safety)

**CTC 50** (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)



## Evaluation of effect of TOCYEN on **Elastin** gene expression modulation in Human Dermal Fibroblast (HDF) cell line

Test Sample	Regulation in Terms of Folds- Elastin
Cell Control (Untreated)	1.00
Tocyen cream 500µg/mL	1.02
Tocyen cream 1000µg/mL	1.08

- In the gene expression study, the Tocyen cream at tested concentrations **showed moderate increase in the level of Elastin gene expression** as compared to the untreated control in the semi-quantitative RT-PCR procedure.
- The results indicate that Tocyen cream has the **potency of increasing the Elastin levels** in Human Dermal Fibroblast (HDF) cell line.
- The Tocyen cream exhibited a CTC50 value of above 1000 µg/mL on the Human Dermal Fibroblast (HDF) cell line. (Safety)

**CTC 50** (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)

## Evaluation of effect of TOCYEN on **MMP-1** gene expression modulation in Human Dermal Fibroblast (HDF) cell line

Test Sample	Regulation in Terms of Folds MMP-1
Cell Control (Untreated)	1.00
Tocyen cream 500µg/mL	0.97
Tocyen cream 1000µg/mL	0.96

- In the gene expression study, the Tocyen cream at tested concentrations **showed moderate decrease in the level of MMP-1 gene expression** as compared to the untreated control in the semi-quantitative RT-PCR procedure.
- The results indicate that Tocyen cream has the **potency of decreasing the MMP-1 levels** in Human Dermal Fibroblast (HDF) cell line.
- The Tocyen cream exhibited a CTC50 value of above 1000 µg/mL on the Human Dermal Fibroblast (HDF) cell line. (Safety)

**CTC 50** (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)



# **Antioxidant benefit**

## **Determination of *in vitro* antioxidant potential of TOCYEN against hydrogen peroxide induced oxidative stress in Human Keratinocytes (HaCaT) cell line**

<b>Tocyen Cream (Concentration Tested)</b>	<b>% Protection</b>
<b>500µg/mL</b>	<b>74.37 ± 0.03</b>
<b>1000µg/mL</b>	<b>125.79 ± 0.02</b>

- In the antioxidant study, the Tocyen cream at tested concentrations (1000µg/mL and 500µg/mL) showed good cytoprotective activity against oxidative stress induced by Hydrogen peroxide.**

## Determination of Antioxidant Activity of the TOCYEN by GSH measurement in human keratinocytes (HaCaT) cell line

Tocyen Cream Concentration tested	% Increase in GSH level over H2O2 control
500µg/mL	66.87 ± 0.225
1000µg/mL	78.06 ± 0.116

- The Tocyen Cream at 500µg/mL showed 66.87 and 1000µg/mL showed 78.06 a **remarkable increase in the levels of GSH** compared to the standard tested, indicating **promising antioxidant effect**.
- The Tocyen Cream was found to be safe in Huma Keratinocytes (HaCaT) cell line even at the highest concentration tested (1000µg/mL). (Safety)



# Cytoprotection

A grayscale microscopic image of a neuron, showing its cell body and branching processes, serving as a background for the title.

## Evaluation of In vitro Cytoprotective effect of TOCYEN against UV induced cell damage in Human Keratinocytes (HaCaT) cell line

<b>Tocyen Cream Concentration tested</b>	<b>% Protection</b>
<b>500µg/mL</b>	<b>32.45 ± 0.08</b>
<b>1000µg/mL</b>	<b>67.47 ± 0.09</b>

- In the in vitro cytoprotective study, Tocyen cream at tested concentrations (1000µg/mL and 500µg/mL) showed cytoprotective activity 67.47 % and 32.45 % respectively against UV induced damage.



# **Melanin Inhibition**



## Evaluation of in vitro anti-pigmentation activity of TOCYEN in Mouse Skin Melanoma (B16-F10) cell line

Tocyen Cream Concentration tested	% Melanin Inhibition
500µg/mL	53.85 ± 0.014
1000µg/mL	90.11 ± 0.003

- The Tocyen cream showed **melanin inhibitory properties** and % of Forskolin induced-Melanin inhibition is 90.11 and 53.85 with Tocyen cream at concentration tested.
- The Tocyen cream has exhibited a CTC50 value which is greater than 1000µg/mL on Mouse Skin Melanoma (B16-F10) cell line. (Safety)

CTC 50 (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)

## Evaluation of Melanin Inhibitory properties of TOCYEN against ERM CZ100 induced melanin synthesis or against pollution damage in B16-F10 cell line

Tocyen Cream Concentration tested	% Melanin Inhibition
500µg/mL	42.72 ± 0.0043
1000µg/mL	47.27 ± 0.0028

- The Tocyen cream showed **melanin inhibitory properties** against ERM CZ100 induced in Mouse Skin Melanoma (B16-F10) cell line.
- The test sample Tocyen beauty cream showed 47.27 % and 42.72 % of melanin inhibition at 1000µg/mL and 500µg/mL concentration.
- The Tocyen cream has exhibited a CTC50 value which is greater than 1000µg/mL on Mouse Skin Melanoma (B16-F10) cell line. (Safety)

CTC 50 (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)

## Evaluation of in vitro Cytoprotective effect of TOCYEN against UV induced melanin synthesis in Mouse Skin Melanoma (B16-F10) cell line

Tocyen Cream Concentration tested	% Melanin Inhibition
500µg/mL	4.21 ± 0.0339
1000µg/mL	22.53 ± 0.0333

- The Tocyen cream showed **melanin inhibitory properties** against UV induced in Mouse Skin Melanoma (B16-F10) cell line.
- The % of UV induced Melanin inhibition is 22.53 and 4.21 with Tocyen cream.
- The Tocyen cream has exhibited a CTC50 value which is greater than 1000µg/mL on Mouse Skin Melanoma (B16-F10) cell line. (Safety)
- CTC 50 (cytotoxic concentration at which 50 % of the cells are dead after **drug** exposure)



# **Moisturization Effect**

## Evaluation of moisturizing effect of TOCYEN by AQP-3 gene expression modulation in Human Keratinocytes

Test Sample	Regulation in Terms of Folds AQP-3
Cell Control (Untreated)	1.00
Tocyen cream 500µg/mL	1.13
Tocyen cream 1000µg/mL	1.20

- In the gene expression study, RT-PCR analysis revealed that **AQP-3 mRNA was increased moderately in a dose dependent manner** in Tocyen over the control value.
- The results indicate that Tocyen cream have the **potency of moisturizing** by increasing the AQP-3 levels in Human Keratinocytes (HaCaT) cell line when treated at non-toxic concentration.
- The Tocyen cream exhibited a CTC50 value of above 1000 µg/mL on the Human Keratinocytes respectively. (Safety)
- Dermal AQP3 gene expression was increased to maintain water homeostasis in response to dehydration,
- CTC 50 (cytotoxic concentration at which 50 % of the cells are dead after drug exposure)

# See The Results of Few of Our Cases

Reduction in  
fine lines  
and wrinkles  
on the forehead



**After 10 Days!**



## Reduced hyperpigmentation areas after Tocyen cream



**After 20 Days!**



**After 20 Days!**



Reduced scars and hyperpigmentation spots



**After Few Weeks!**

Reduced scars and hyperpigmentation spots



**After Few Weeks!**



Reduction in pore size and scars



**After Few Weeks!**

Reduction in scars



**After Few Weeks!**

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