OILY SKIN, HORMONES IN FULL FLIGHT…

Why is it so unpleasant?
Oily skin is a headache for people suffering from it. Localized on the face, the scalp, the cleavage, the upper back, it affects the parts of the body the most exposed to view and the most esthetically attractive.

Unaesthetic as possible. It is visible, is noticed and is often felt as a terrible social obstacle. It is very difficult to live with and sometimes is the cause of non-negligible psychological problems.

Real international plague, since it involves about 2 European women out of 5 and almost 50% of Asian and South American women. Teenagers, in particular, are not spared! At the adolescence time, profound changes affect them, and very quickly these young people about to become adults see their faces invaded by disgracious pimples and blackheads. What a disaster for these youngsters at a time when they are more than ever concerned by their appearance!

Oily skin plays havoc wherever it is found! But what is the culprit? Without a doubt, hormones, and more precisely testosterone, which for many reasons has its secretion deregulated!

Oily skin is above all weak and imbalanced, characterized by an **unsightly hormone-dependent hyperseborrhoea.** In case of hormonal disorder, the sebaceous glands suddenly become hyperactive and secrete sebum in excess. This overproduction renders the skin oily and shiny. Very often it is also accompanied by irritation and even inflammation. The skin loses its radiance, the hair, rendered oily, looks flat.

So what is the solution to struggle against this phenomenon that attenuates day after day the basic values of beauty?

Zinc, of course! **The superstar for regulating!** But be careful: not in any form! Its effectiveness will be increased when it is combined with a **« pilot molecule » naturally present in the skin, pyrrolidone carboxylic acid (L-PCA)** that guides it to the target cells.

SEBUM, SEBORRHEA AND ZINC, A CLOSE LOOK

Sebum is a natural oily substance secreted by the sebaceous glands of the skin (*see Fig. 1*) by a physiological process called **seborrhea**. Its role is to give suppleness and freshness to the skin and hair, at the same time as protecting it from multiple external aggressions.

Sebum is essential for the equilibrium of the skin and hair. When present in excess, it is prejudicial and causes the appearance of unsightly reflections, irritation, inflammation in the most serious cases. (skin with a tendency to acne)

Hyperseborrhea results from increases in the size and activity of the sebaceous glands following hormonal modifications, a sub-optimal hygiene, dietary imbalances, circulation disorders and more. There are many causes and origins!

Seborrhea regulation is androgen-dependent, in particular by **testosterone**. Every target cell of the sebaceous gland (fibroblasts) contains an enzyme (see fig. 2), **5 alpha-reductase**, that converts testosterone into **dihydroxy-testosterone (DHT)**. DHT acts on the activity of the hair follicle, causing the stimulation of the sebaceous gland and the resulting increase in sebum production.

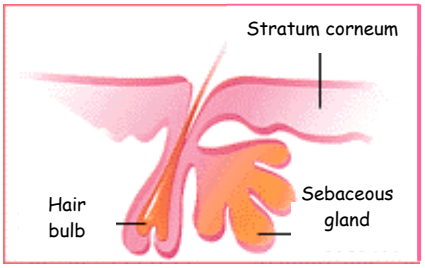


Fig. 1: Sebaceous gland

Hyperseborrhea is then accompanied by the **proliferation of microbial flora**, in particular ***Propionibacterium acnes*** which encounters a territory more than favorable for its growth in the space of the sebaceous pores. This is followed by irritation phenomena that can sometimes lead to inflammation.

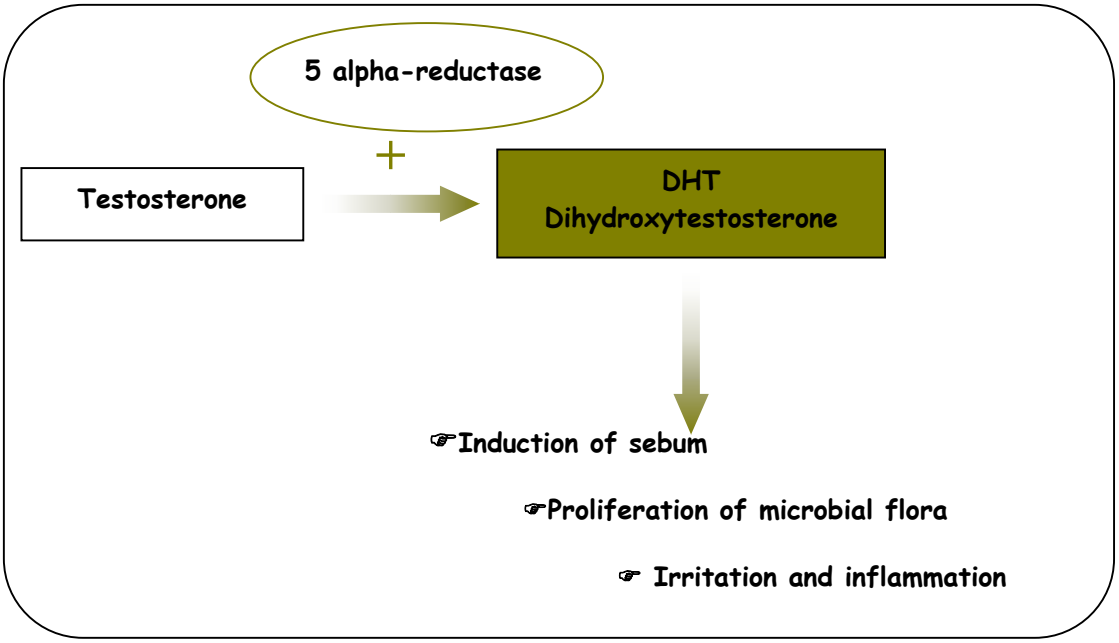


Fig. 2: Role of 5 α-reductase in the process of hyper-seborrhea

ZINCIDONE®

Physio-seboregulator

ZINCIDONE®, THE SYNERGY OF TWO MAJOR SKIN BENEFACTORS

▲ COMPOSITION

Zincidone® (see Fig. 3) is the zinc salt of pyrrolidone carboxylic acid, **a double acting complex** that optimally allies the beneficial effects of **zinc** and **L-PCA**, **physiological components of the organism**.

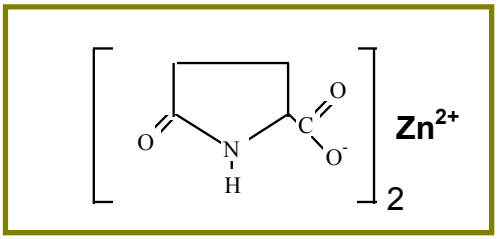


Fig. 3: Chemical structure of Zincidone®

CTFA Name	:	Zinc PCA
Preservative system	:	none

▲ ZINC, THE UNIVERSAL ANTI-SEBORRHEIC AND TRACE-ESSENTIEL

Trace element present in the largest amount in humans after iron, it is a component of more than 90 metallo-enzymes and is active in almost 200 metabolic biochemical reactions. This makes it an absolutely indispensable and major element for nutrition, detoxification and the battle against cell aging.

Scientific findings have shown that zinc has the capacity of **reducing the secretion sebum** by its **inhibitory action on 5 alpha-reductase**.

Its well-known **antiseptic activity enables** it to **limit bacterial colonization**.

▲ L-PCA, PHYSIOLOGICAL PASS-KEY

Present throughout the organism, its concentration is high in the human stratum corneum, where it is the link between energy metabolism (Krebs cycle), the protein pool (precursor of proline and hydroxyproline) and skin hydration (essential constituent of NMF, natural moisturizing factor.

L-Pyrrolidone carboxylic acid, or **L-PCA**, is the cyclization product of glutamic acid, an amino acid found in many plant substrates.

Because of its very high affinity for the epidermis, L-PCA can be considered as a genuine **« pilot molecule»** capable of guiding cations combined with it up to cells and thereby increase their efficacy.

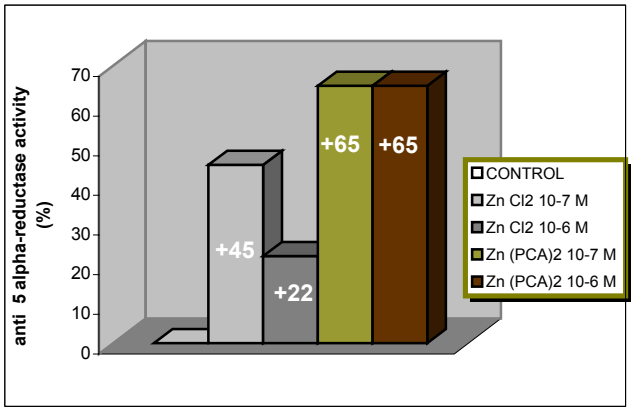
ZINCIDONE®

Physio-seboregulator

▲ PERFORMANCES

✓ ANTI 5 ALPHA-REDUCTASE ACTIVITY

(Pre-incubation of humans dermal fibroblasts in presence of Zincidone® or Zinc Chloride / Addition of radioactive (tritiated) testosterone and incubation for 24H / Preparation of cell homogenates by sonication and radioactivity measurement)



Anti 5 alpha-reductase activity of Zincidone® / Zn $(PCA)_2$ (+65%) much higher than zinc chloride / $ZnCl_2$ (+45%).

Intrinsic activity greater than equimolar quantity of $ZnCl_2$.

Better cell penetration of Zincidone®.

✓ SEBOREGULATION ACTIVITY

(Sebometric study on 2 groups of 16 volunteers after 28 daily application on the half forehead with a cream containing 1% Zincidone® versus placebo and non-treated zone)

	Placebo versus non-treated zone	Zincidone® 1% versus non-treated zone
■ Variation of skin sebum rate	+ 9 µg/cm²	- 22 µg/cm² *

** : significant*

✓ ANTI MICROBIAL ACTIVITY

(Determination of the minimal Inhibitory Concentration MIC)

	MIC of ZINCIDONE® % (p/v)
■ *Propionibacterium acnes*	between 0.1 and 0.25%
■ *Staphylococcus epidermidis*	between 0.5 and 0.75%
■ *Staphylococcus aureus*	0.7%
■ *Pseudomonas aeruginosa*	0.7%
■ *Escherichia coli*	0.7%
■ *Candida albicans*	0.7%

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