

AC Sebum Control Enzyme PF



tired of oily skin?
take control! sebum control!
hair care + controls dryness.
perfect for problem skin
Anti-Sebum

BACKGROUND

Oily skin and redness do not leave a flawless first impression. Sebum primarily comes from the sebaceous glands, which are in high abundance on the face, chest and shoulders. After sebum is produced, it then migrates to lipid-filled cells and is eventually secreted onto the surface of the stratum corneum through the pores. Previous treatments for treating excess sebum typically involved the use of talc to absorb and mask shininess. However, talc can leave a heavy build-up on the skin, merely concealing the problem and causing clogged pores. Impacted by various conditions, the skin and scalp may become red, itchy, oily, dry and flaky. Regular moisturizing, washing and/or conditioning may not fix these problems, but actually make them worse.

SCIENCE

AC Sebum Control Enzyme PF reduces the activity of the sebaceous glands by inhibiting the activity of 5 α -reductase. It will limit the amount of sebum secretion due to an astringent effect by its tannins and can prevent acne that is caused by bacterial proliferation. The enzyme 5 α -reductase is accountable for the production of the androgen hormone dihydrotestosterone that generates the sebaceous glands' activation. By inhibiting 5 α -reductase, we can considerably reduce the amount of sebum produced. Furthermore an astringent effect is produced by tannins because tannins are able to constrict tissues and contract the pore openings in the skin. Lastly because there is a decline in the accumulation of sebum within the pilo-sebaceous channel. This also leads to less bacterial proliferation which decreases problem skin for a healthier overall appearance.

Code Number: 20395PF

INCI Name: Butylene Glycol & Water & Spiraea Ulmaria Extract

INCI Status: Conforms

REACH Status: Complies

CAS Number: 107-88-0 & 7732-18-5 & 84775-57-5

EINECS Number: 203-529-7 & 231-791-2 & 283-866-3

Origin: Botanical & Synthetic

Processing:

GMO Free

No Ethoxylation

No Irradiation

No Sulphonation

Additives:

Preservatives: None

Antioxidants: None

Other additives: None

Solvents Used: Butylene Glycol & Water

Appearance: Brown Clear Liquid

Soluble/ Miscible: Water Soluble

Ecological Information:

88.45% Biodegradability

Microbial Count: <100 opg,
No Pathogens

Suggested Use Levels: 2.0% - 5.0%

Suggested Applications: Control Oil & Dryness, Problem Skin

Benefits of AC Sebum Control Enzyme PF:

- Sebum Control
- Alternative Approach for Oily Skin
- Ideal for Problem Skin
- Controls Dryness

AC Sebum Control Enzyme PF

BENEFITS

Active Concepts developed a product that controls excess sebum and is the answer to this persistent problem. **AC Sebum Control Enzyme PF** comes from the Gallotannins and Ellagitannins of meadowsweet. Meadowsweet acts as natural astringents to reduce the activity of the sebaceous glands by inhibiting the activity of 5 α -reductase. This in turn, limits the amount of sebum secreted due to an astringent effect by the tannins and can help prevent problem skin. **AC Sebum Control Enzyme PF** regulates sebum production and secretion so that we are not just covering up the problem but providing a solution!

EFFICACY

An *in-vitro* study was conducted to determine the effects of **AC Sebum Control Enzyme PF** on the inhibition of 5 α -reductase in human keratinocytes. The enzyme 5 α -reductase is responsible for the production of the androgen hormone dihydrotestosterone, which stimulates the sebaceous glands to produce sebum. To determine the levels of 5 α -reductase, we measured mRNA levels by Reverse Transcription Polymerase Chain Reaction (RT-PCR) and running an agarose gel.

Inhibition of 5 α -reductase mRNA

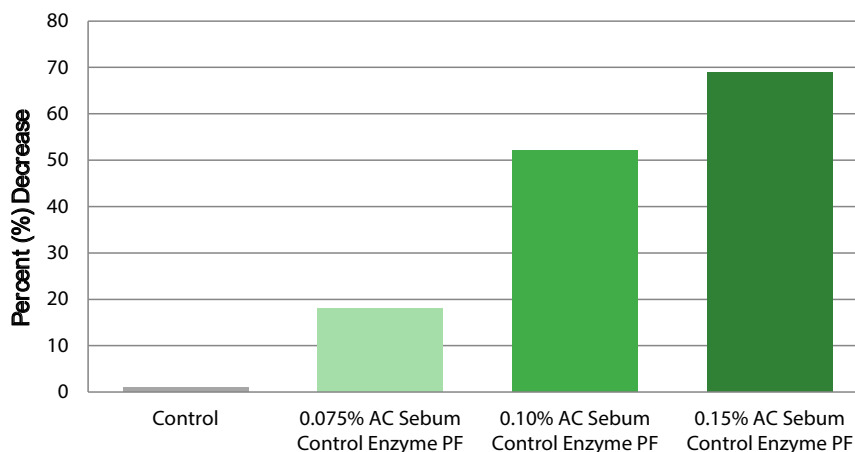


Figure 1. The effects of **AC Sebum Control Enzyme PF** on the inhibition of 5 α -reductase mRNA in human keratinocytes.

According to the results, we found that the application of **AC Sebum Control Enzyme PF** inhibits 5 α -reductase production, and thus controls the production of sebum within the sebaceous glands. It inhibited 5 α -reductase at all tested levels and worked in a dose-dependent fashion, as the highest dose level was most effective. 0.075% **AC Sebum Control Enzyme PF** decreased 5 α -reductase mRNA by 18.0%; 0.10% **AC Sebum Control Enzyme PF** decreased 5 α -reductase mRNA by 52.0%; and 0.15% **AC Sebum Control Enzyme PF** decreased 5 α -reductase mRNA by 69.0%. Therefore because 5 α -reductase regulates the production of sebum in the sebaceous glands, by inhibiting 5 α -reductase **AC Sebum Control Enzyme PF** can inhibit the production of sebum that would eventually be secreted onto the stratum corneum.

An *in-vitro* study was conducted to determine the effects of **AC Sebum Control Enzyme PF** on antimicrobial activity of *Staphylococcus epidermidis* and *Propionibacterium acnes*, which are two skin bacteria responsible for acne.

AC Sebum Control Enzyme PF

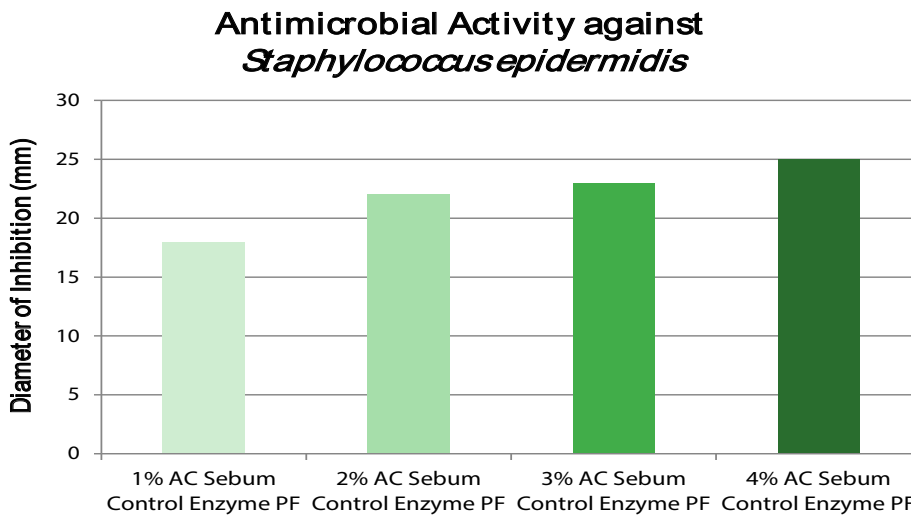


Figure 2. The antimicrobial activity of **AC Sebum Control Enzyme PF** against *Staphylococcus epidermidis*.

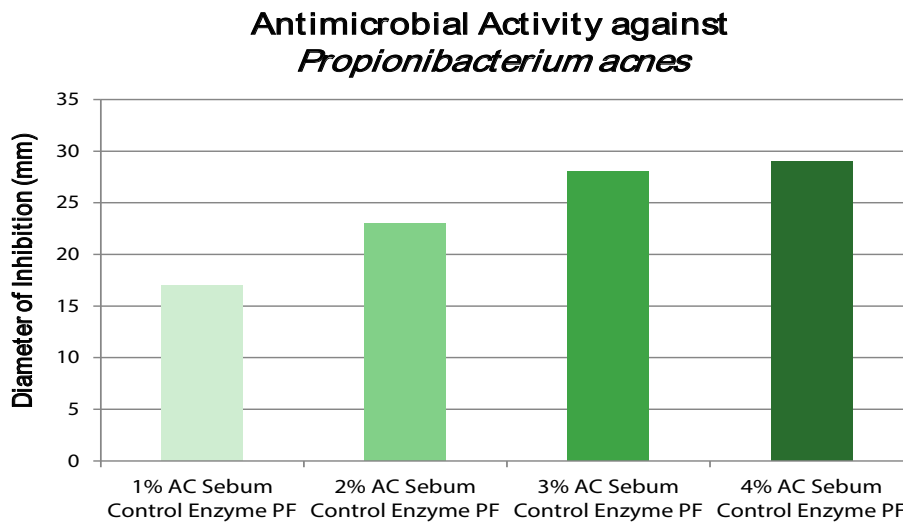


Figure 3. The antimicrobial activity of **AC Sebum Control Enzyme PF** against *Propionibacterium acnes*.

AC Sebum Control Enzyme PF is able to sufficiently inhibit the growth of both microbials, *Staphylococcus epidermidis* and *Propionibacterium acnes*. **AC Sebum Control Enzyme PF** is able to reduce the accumulation of sebum within the pilo-sebaceous channels that assist in the proliferation of skin bacteria and ultimately leads to irritation and acne. Thus by inhibiting the growth of these skin bacteria's, **AC Sebum Control Enzyme PF** can act as a deterrent against problem skin.

An *in-vivo* study was also conducted to quantify the astringent effect of 5.0% **AC Sebum Control Enzyme PF** versus a placebo. Photometric measurement by a Sebumeter® was used to determine the lipid index (the refractory index that correlates with the lipids on the surface of the skin). Measurements were taken before use and then again after 30 days of twice daily application.

AC Sebum Control Enzyme PF

Astringent Properties

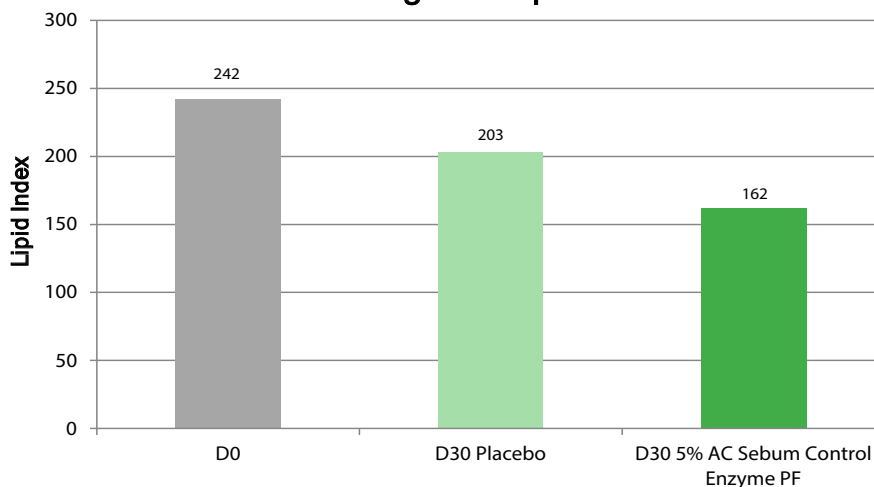


Figure 4. Astringent properties for **AC Sebum Control Enzyme PF**.

The results showed that 5.0% **AC Sebum Control Enzyme PF** produced a decrease in the lipid index in 87% of volunteers and 73.0% of volunteers showed a return to healthy, normal sebum levels (below 190 on the lipid index). Figure 4 demonstrates the effects of 5.0% **AC Sebum Control Enzyme PF** and its astringent properties.

A second *in-vivo* study was done on visual astringent effect of 5.0% **AC Sebum Control Enzyme PF**. Sebutage® was used to determine the sebum on the surface of the skin. After cleaning the skin, the Sebutage® was applied for 20 minutes then analyzed with a digital image analyzer to determine the number of sebum spots.

Visual Astringent Properties

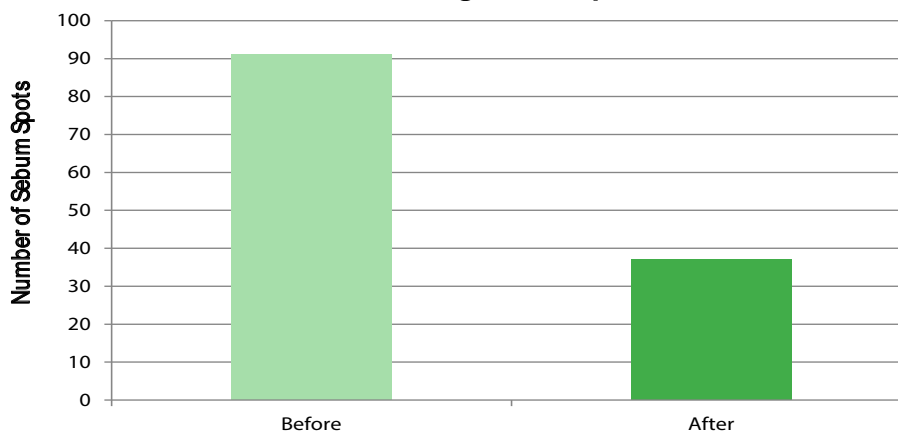


Figure 5. The decrease in the number of sebum spots due to the astringency of **AC Sebum Control Enzyme PF**.

AC Sebum Control Enzyme PF regulates the sebum on the skin and scalp to maintain a healthy balance, thus preventing overly oily or dry skin. This product is a perfect addition to skincare products with a focus on oily or dry skin, while also being a useful ingredient in haircare products, such as dry shampoos, to minimize the appearance of oily hair.