



5α Avocuta[®] T

Sebum regulator

Active ingredient from **green chemistry**
Plant esters from avocado oil
Sustainable sourcing from **Mexico, Peru
and South Africa**

O Reduces excessive secretions of sebum
from the scalp and skin

O Reduces the shiny appearance of the T-zone

O Decreases dandruff



Expanscience is the first pharmaceutical & dermocosmetics laboratory in the world to be certified by B CORP, and the first to be recognized as "Exemplary" by the AFAQ 26000 in France



Expanscience is a member of the UEBT for protecting biodiversity and complying with fair trade regulations



Identity

Botanical information

Botanical name: *Persea gratissima*

Local names: Aguacate in Spanish, ahuacatl in Nahuatl

Family: Lauraceae

Characteristics: fruit tree (avocado tree) reaching 15 metres in height and bearing fruit (avocados) in bunches

Fruit: climacteric berries, greenish-brown colour, pyriform with a single pip of 150 g to 250 g, exists in several varieties

Environment: very sunny

Traditional uses: cosmetics (protection against harmful effects of the sun and wind, virgin oil for hair tone and shine)
food (fruit consumed by the Aztecs and Mayas for 10,000 years)



Plant supply chain from Mexico, Peru and South Africa

Avocado oleochemistry have been one of Expanscience's areas of excellence for the past 30 years. Our numerous patents are proof of our expertise.

Expanscience has an ambitious sourcing policy as part of its Corporate Social Responsibility strategy to guarantee the quality of ingredients while safeguarding human rights and helping protect the environment.

Therefore Expanscience has chosen to work with local partners, taking concrete steps to fight deforestation, encourage best cultural practices based on tradition and contribute to strengthening the producer's economy and society.

5 α AVOCUTA[®] T, plant esters, has then been developed from green chemistry.

The purity of this active ingredient is guaranteed to be over 95% in esters thanks to a molecular distillation process patented by Expanscience.

Concept

Original plant esters for optimized sebum regulation

Sebum, a lipidic film produced by the sebaceous glands, is essential for maintaining skin and hair hydration, as their suppleness and their smoothness. It also contributes to the cutaneous flora balance.

Hormonal disorders, stress, pollution, temperature changes or make-up can induce an excessive sebum production, and thus greasy skins problems.

The hyperseborrhoea, a consequence of this secretion and at the origin of the problems of oily skin with acne, may be caused by internal factors (hormone imbalance) or external factors (increase in temperature, pollution, etc.).

The enzyme 5 α - reductase, type 1, metabolizes testosterone into dihydrotestosterone (DHT), an androgen which has a powerful effect on the skin. The resulting DHT affects the pilosebaceous follicle, which increases the size of the sebaceous glands and the level of sebum secretion.

▶ **The butyl esters of avocado oil, which constitute 5 α AVOCUTA[®] T, in low doses, significantly inhibit the activity of 5 α - reductase type 1.**

Effectiveness in-vitro

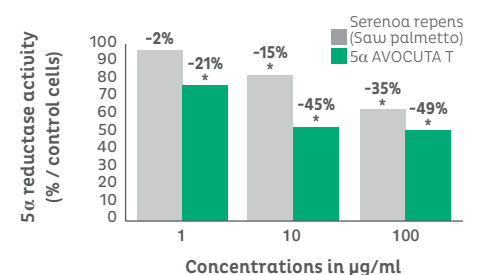
Inhibition of 5 α - reductase

Normal human fibroblasts are treated for 24 hours, either with *Serenoa repens* (a pharmaceutical active ingredient known to inhibit 5 α - reductase) or with 5 α AVOCUTA[®] T, in the presence of radiomarked testosterone.

The formation of dihydrotestosterone (DHT) from testosterone is directly correlated to 5 α - reductase activity and its quantity is proportional to the quantity of radioactivity measured.

At same concentrations, 5 α AVOCUTA[®] T reduces the activity of 5 α - reductase from 49% us 35% for *Serenoa repens*.

▶ **Since DHT is a powerful androgen stimulating the sebaceous glands, 5 α AVOCUTA[®] T appears to be an excellent active substance for improving seborrheic conditions.**



5 α AVOCUTA[®] T OFFERS AN ORIGINAL AND VERY EFFECTIVE

Clinical study

Sebum regulator effect of 5 α AVOCUTA[®] T

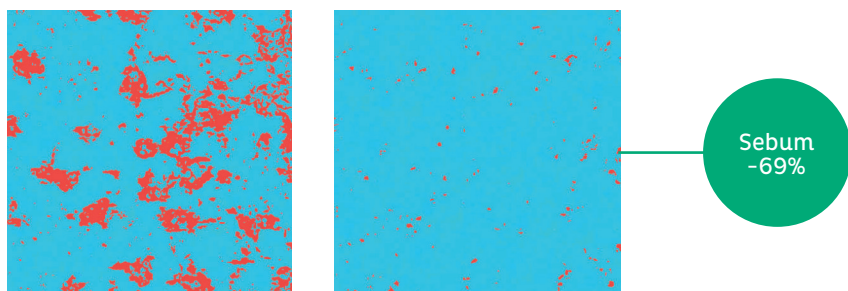
The following two studies were conducted in collaboration with dermatologists, in order to ensure that conditions were as close to reality as possible. The volunteers who took part in these studies had consulted the dermatologists about their problems of greasy hair or greasy skin, not solved by existing products on the market.

The studies were structured in the same way:

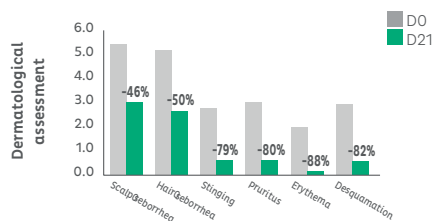
1. Sebum samples taken before and after application using a Sebifix F16 patch. Quantification by image analysis.
2. Scoring by a dermatologist (scale 0 to 9) of the condition either of the volunteers' hair and scalp, or of their skin, before and after treatment.
3. Satisfaction questionnaire on products used completed by the volunteers.

● Effect on hair

1. Shampoo containing 1% 5 α AVOCUTA[®] T, applied once every two days, 27 volunteers (3 weeks). The cumulative surface area of lipid spots decreased by an average of 69% (13 subjects), demonstrating a marked slowing down of sebaceous gland activity.



2. The seborrhea was reduced by approximately half, while the stinging, pruritus, erythema and desquamation that frequently accompany seborrheic conditions had practically disappeared.

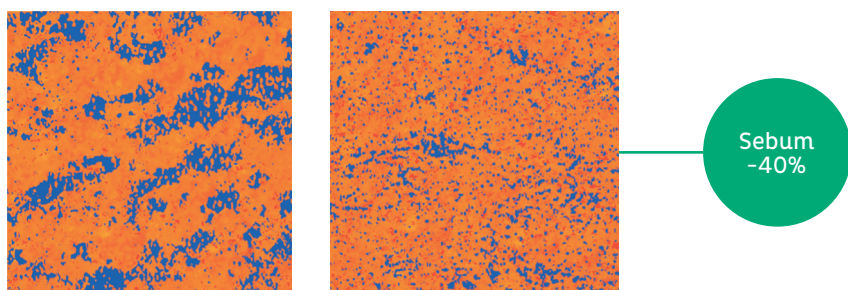


3. Lastly the volunteers confirmed these results:

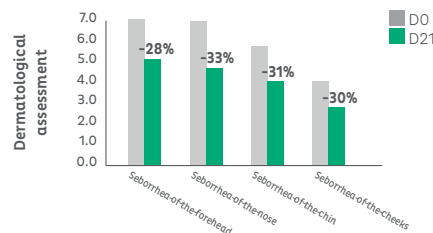
- improvement of the greasy appearance of hair **78%**
- soothing effect on irritation **63%**
- reduction of dandruff **67%**

● Effect on the skin

1. Cream containing 2% 5 α AVOCUTA[®] T, applied twice a day, 23 volunteers (3 weeks). The cumulative surface area of lipid spots decreased by an average 40%, demonstrating a marked slowing down of sebaceous gland activity.



2. According to the dermatologist, seborrhea in the T-zone (face, nose and chin) reduced by approximately 30% in three weeks.



3. Lastly the volunteers confirmed these results:

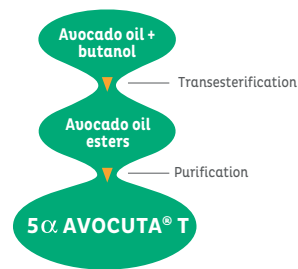
- improvement of oily appearance **78%**
- reduction of the shiny appearance of the T-zone **78%**
- regulation of regreasing **78%**

Notes for formulators

General information

- Description: oily liquid, colourless to slightly yellow, characteristic odour
- INCI name: *Butyl Avocadate*
IECIC Listed - 2015 issue (China)
CFTA 2004 Listed
- Origin: plant – ester obtained from the oil of the *Persea Gratissima* avocado
- Dose: 0.5% to 2%
- Solubility: liposoluble
- Recommended formulation temperature: up to 75°C
- Antioxydant: Tocopherol (0.4%)
- Storage: under nitrogen, protected from light and heat
- Patent: WO0152837, 18/01/2000

Process



Applications

- Oil-control skin care products (creams, masks, T-zone specific products)
- Oil-control hair care, anti-dandruff hair care
- Cleansing and treatment gels (face and body)

5α AVOCUTA® T in Sebo-Clean Facial Purifying Cleanser to remove sebum excess

	DEIONIZED WATER	Aqua, Water	50.05%
	GENAPOL LRO LIQUID	Sodium Laureth Sulfate	15.00%
	ORAMIX L30	Sodium lauryl sarcosinate	5.00%
A	DEHYTON K COS	Cocamidopropyl Betaine	10.00%
	REWODERM LIS 80	PEG-200 Hydrogenated Glyceryl Palmate and PEG-7 Glyceryl Cocoate	2.00%
	5α AVOCUTA® T	Butyl Avocadate, Tocopherol	1.00%
B	PARFUM EAU DE MILAN 14426/OM	Parfum	0.30%
	EMULGIN HRE 455	PEG-40 Hydrogenated Castor Oil and Propylene Glycol and Water	3.25%
C	MICROCARE MT	Methylisothiazolinone	0.0015%
D	GLUCAMATE DOE 120	PEG-120 Methyl Glucose Dioleate	0.90%
	DEIONIZED WATER	Aqua, Water	10.00%
E	ISOPENTYLDIOL	Isopentyldiol	1.00%
	SODIUM CHLORIDE		1.50%

Formulation instructions on demand