



INDUSTRIA
DERIVATI
NATURALI

GLI ESTRATTI DI PIANTE: DA TUTTO IL MONDO UN SOSTEGNO ALLA BELLEZZA E ALLA SALUTE

FROM ALL OVER THE WORLD, PLANT EXTRACTS SUPPORT BEAUTY AND HEALTH



CEC Editore in collaborazione con SISTE ti invita a...

Stefano Togni

**Le giornate della salute e del benessere:
Innovazione e Ricerca**



MORE THAN ONE METABOLISM

COMPOUNDS OF **PRIMARY METABOLISM**

Absolutely necessary for life such as:

- Energy sources
- Genetic material
- Proteins
- Components of cells membranes

COMPOUNDS OF **SECONDARY METABOLISM**

Molecules not required for the short term functioning of an organism.

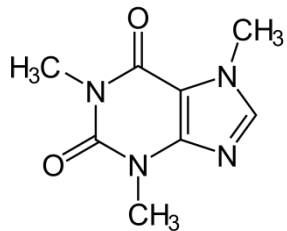
- Toxic to the animals that eat the plant
- Pigments in flowers to attract pollinators



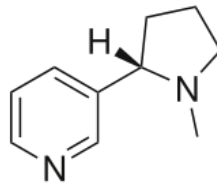
MORE THAN ONE METABOLISM: MANY COMPOUNDS!



ALKALOIDS

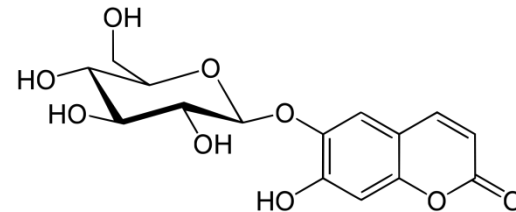


caffeine



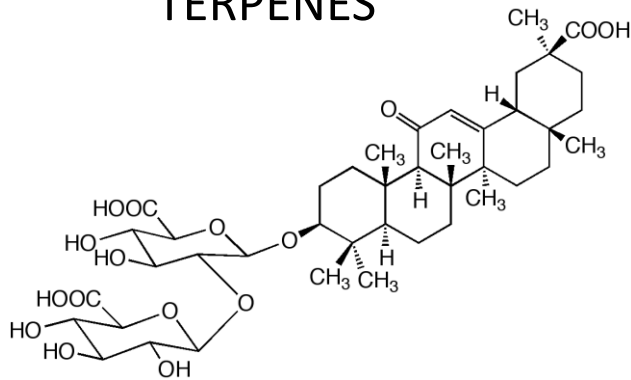
nicotine

COUMARINS



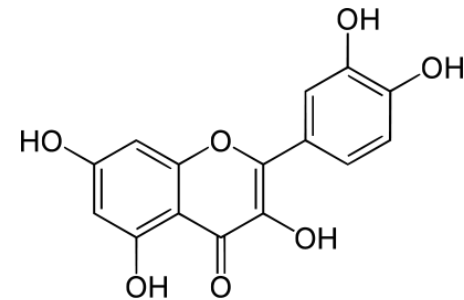
aesculin

TERPENES



glycyrrhizin

AND FLAVONOIDS!



quercetin

PROLOGUE

PLANTS FOR BEAUTY



PROLOGUE

UNDERSTANDING OF LIFE

«Herbs and plants are medical jewels gracing in the woods, fields and lanes which few eyes see and few minds understand.»

Linnaeus (1707-1778)

Carl v. Linné



CARL LINNAEUS

INTRODUCTION

Hunter-gatherers: empirical observations
about **plants** (food, but also poisons and **medicines**).

Neolithic communities (8,000 to 3,000 years b.c.): domestication of
plants and **systematic knowledge** (emergence of written word)



INTRODUCTION

Natural products for health care: medicinal plants (V-X cent)

Hortus simplicium (ca. 1500)



Pharmacognosy is the study of medicines derived from natural sources.



EXTRACT DEFINITIONS ACCORDING TO PH. EUR.



Standardised extracts:

given content of constituents with **known therapeutic activity**;
standardisation achieved by inert material or by blending batches of
extracts.

Quantified extracts:

defined range of constituents; adjustments by blending batches of extracts.

Other extracts:

defined by their production process and their specifications.

ADVANTAGES OF EXTRACTS VS BOTANICAL DRUGS



Extracts, unlike botanical drugs (part of plants):

- Have a **higher amount** of active compounds
- Allow the removal of **toxic** or undesired compounds
- Have a long shelf life
- Offer greater availability
- Present a final **form easier** to manage

“Drug” in pharmacognosy means the part of the plant used – it derives from the German word “**troken**”= dried

EXTRACTION: WHAT IS IT ABOUT?

Maceration: the solvent and the drug are put in contact until the saturation balance is reached.



Percolation: the drug is treated with fresh solvent until exhausted.



WHERE DO WE FIND EXTRACTS?



Extraction industry for:

- Drugs
- Food and **supplements**
- **Cosmetics**/medical devices

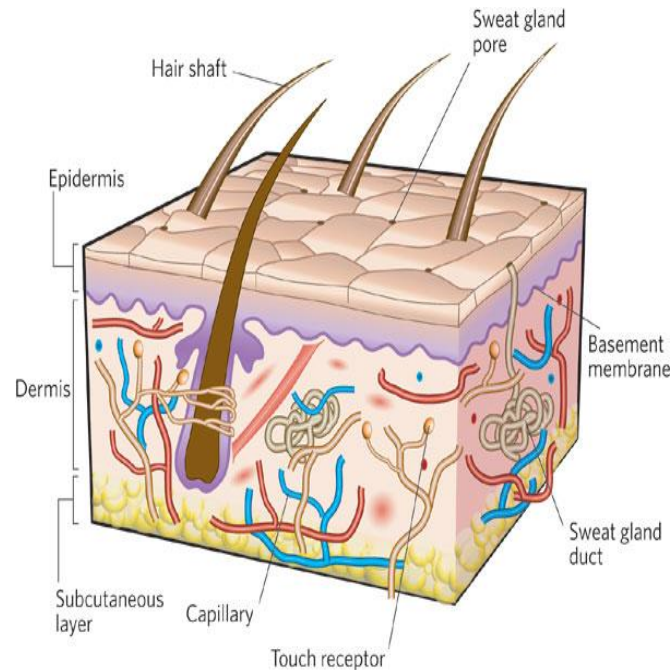
But also additives, feed, excipients

Quality issues, although regulated by different laws in the different sectors, are **very similar** (contaminants).

SKIN BIOLOGY

SKIN HYDRATION

CONNECTIVE TISSUE
PROTECTION



ANTI-AGEING

SOOTHING, LENITIVE

SKIN CARE



SKIN HYDRATION

XILOGEL®

ALL IN ONE ANTI-
AGEING

SERICOSIDE

CONNECTIVE TISSUE
PROTECTION

CENTELLA ASIATICA

SOOTHING, LENITIVE

BOSEXIL®



Selected Botanical Actives:

XILOGEL[®] and **XILOGEL[®] HS**



MOISTURIZERS



SKIN HYDRATION

XILOGEL[®]: OVERVIEW

Tamarind is one of the most beautiful trees in South East of Asia.

Its young pods are used for nutrition and for manufacturing spices (e.g. Worcester sauce).

Used in Ayurvedic Medicine for gastric and digestive problems.

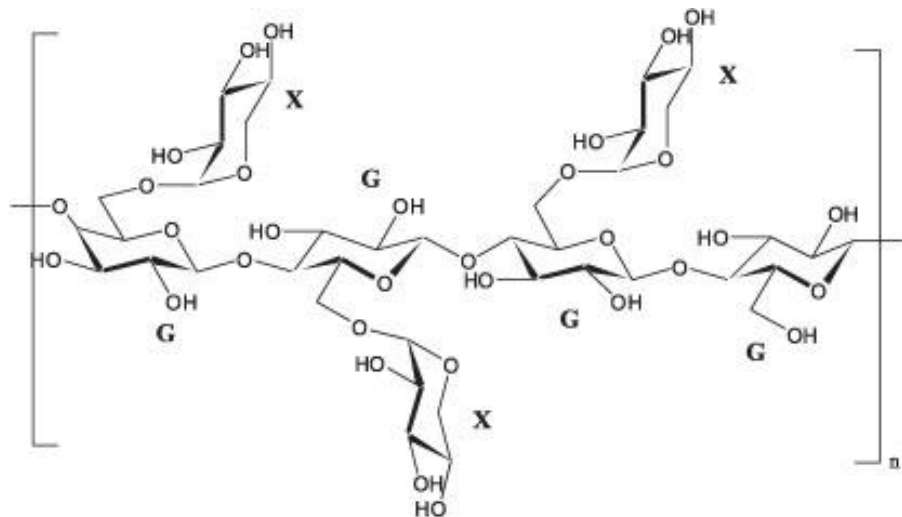


XILOGEL[®]: OVERVIEW



The seed of tamarind has a high content of polysaccharide:

Xyloglucan (branched) – around 600 kDa MW



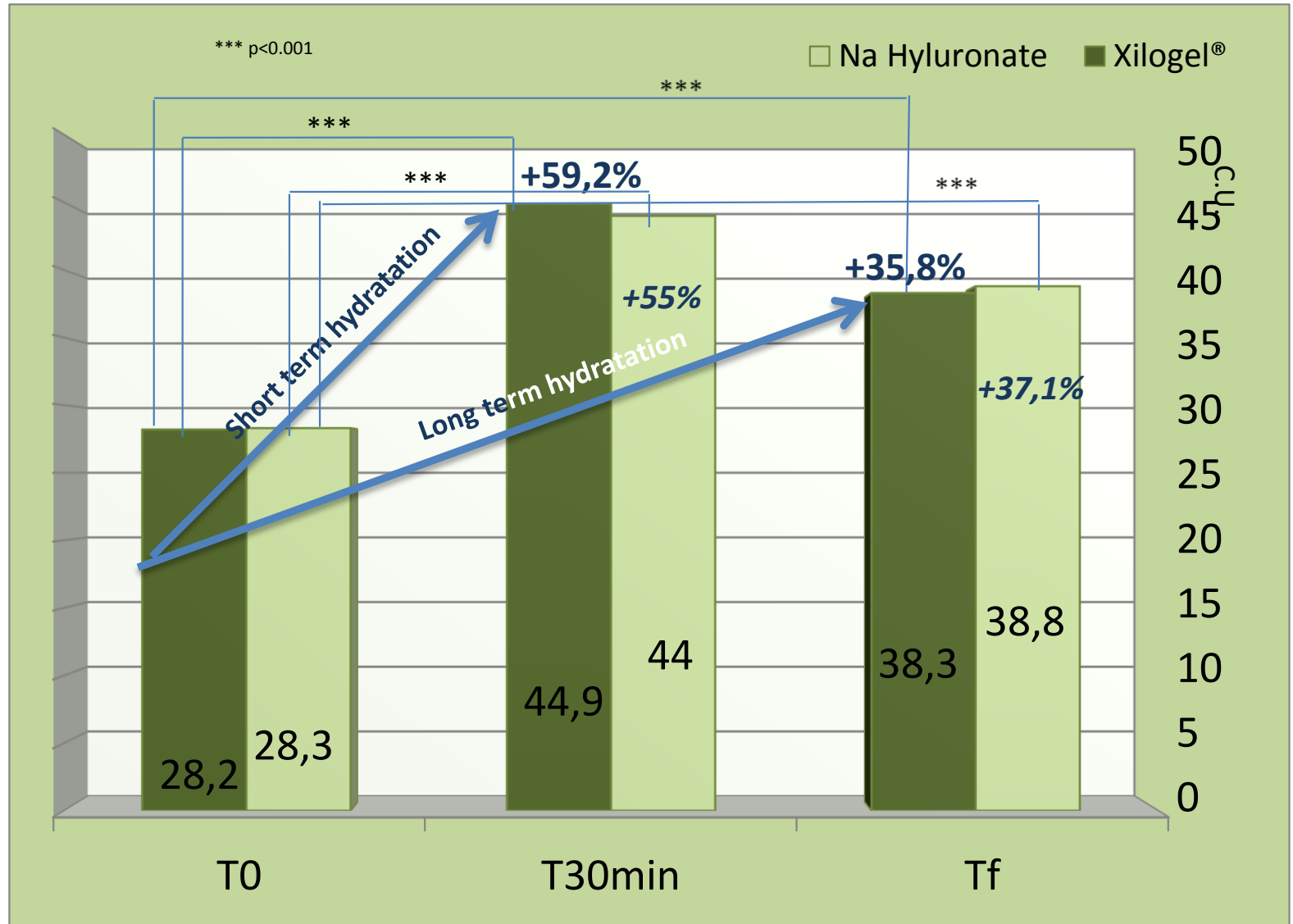
Representative xyloglucan repeat unit
X = Xylose G = Glucose

A novel **film-forming** and **moisture-regulating** polysaccharide

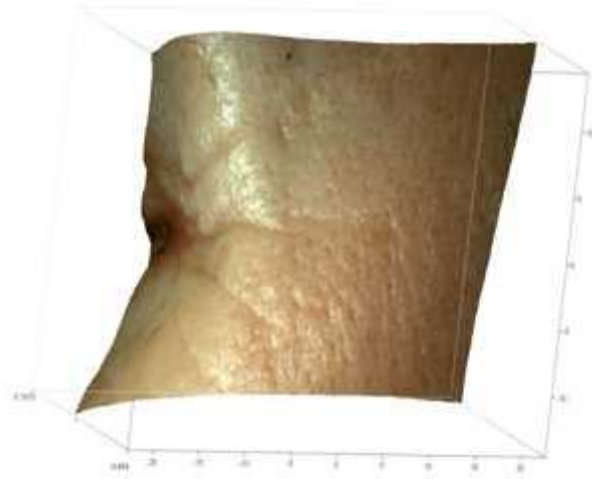
XILOGEL[®]: THE EFFICACY

Study:	Hydrating, Elasticizing, Anti-age and re-densifying efficacy
Experimental model	0.5% vs. Hyaluronic acid (MW 1.1 -1.7 mioDa); 20 female volunteers for 4 weeks + immediate hydration measurement at 30 min
Measured parameters	Hydration (Corneometric units), Elasticity, Roughness (3D digital imaging) and ecogenicity (density)
Results	Hydration: +59.2% (immediate); +35.8% (long-term) Overall elasticity: +19.4%; Average roughness: -27.6%; Maximum roughness: -21.3%; Density improved by +7.9%;

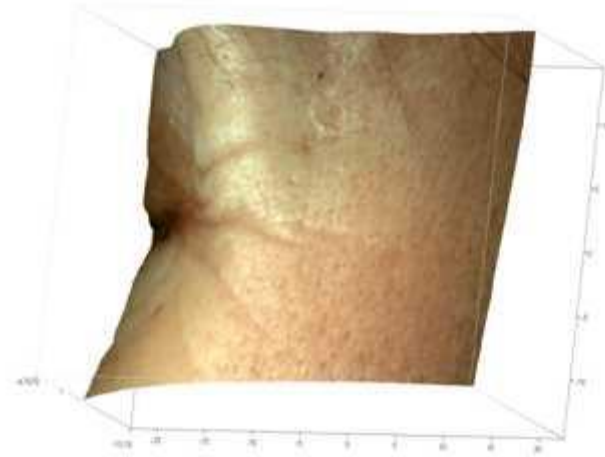
XILOGEL®: HYDRATION



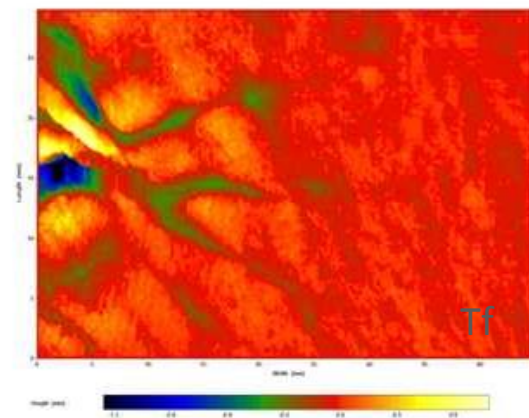
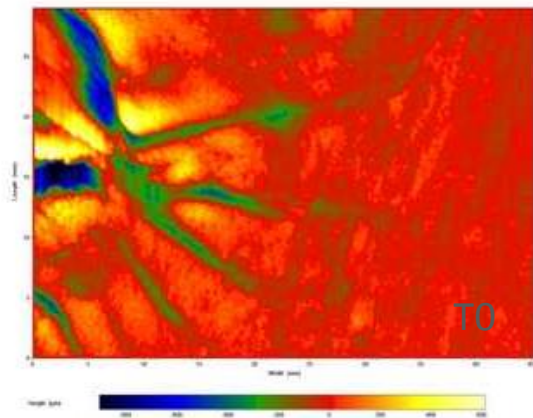
XILOGEL®: WRINKLES



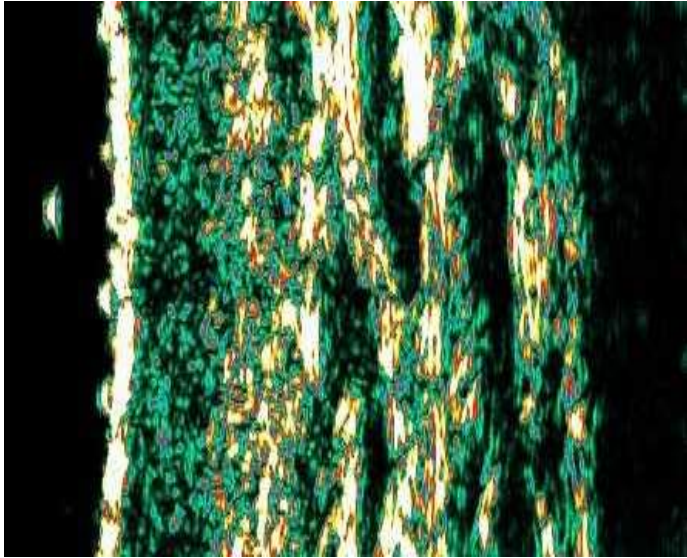
Skin Roughness
Subject 14 – T0



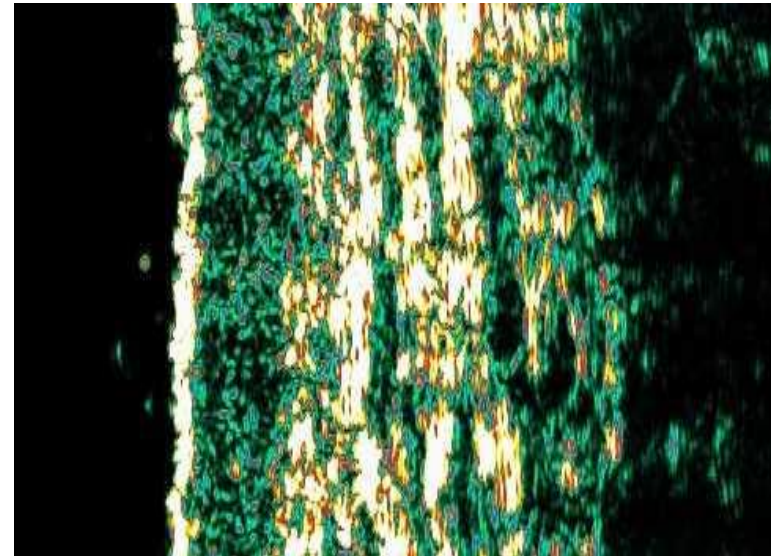
Skin Roughness
Subject 14 – Tf



XILOGEL[®]: SKIN DENSITY

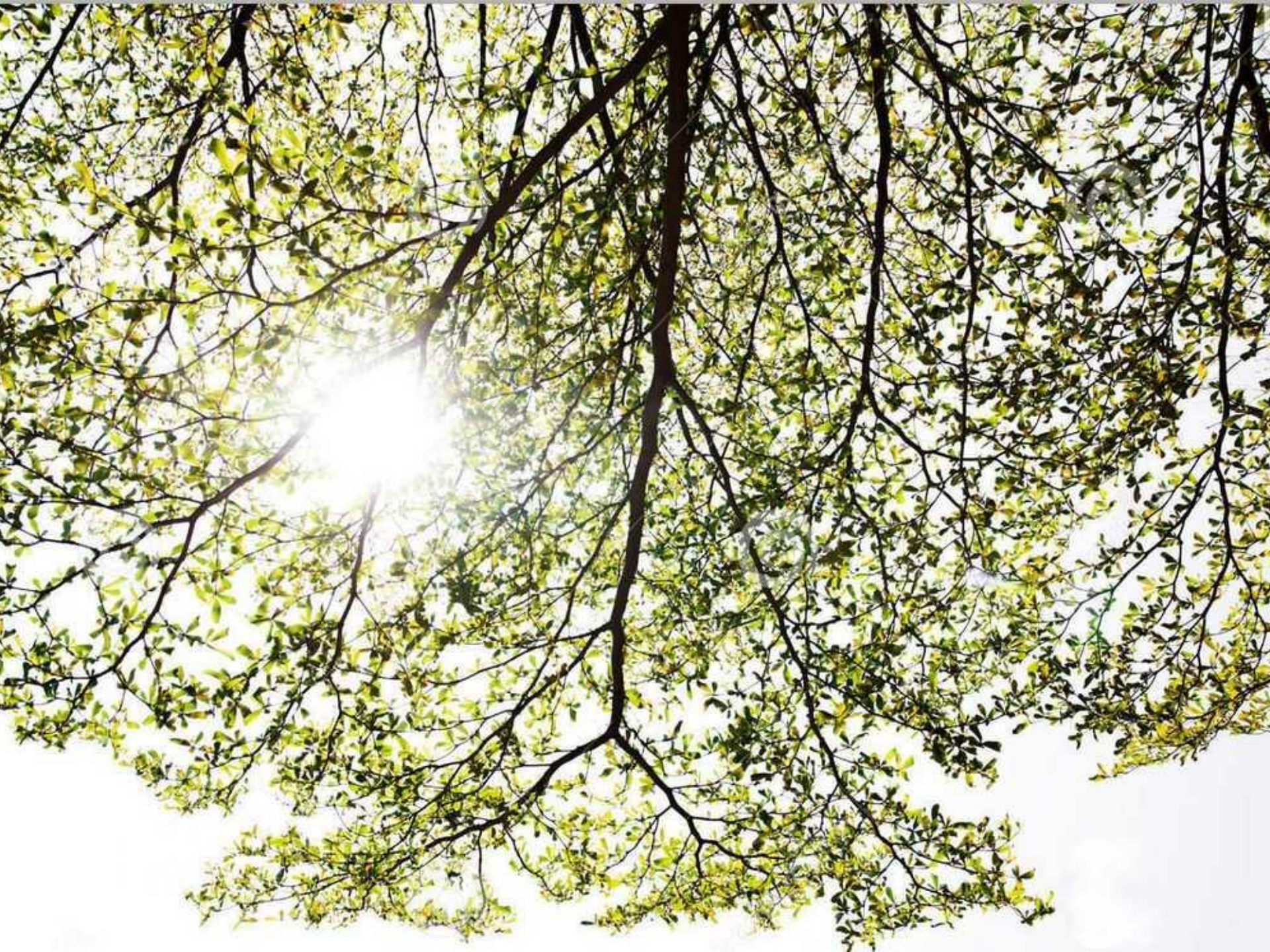


Skin Density
Subject 6 – T0



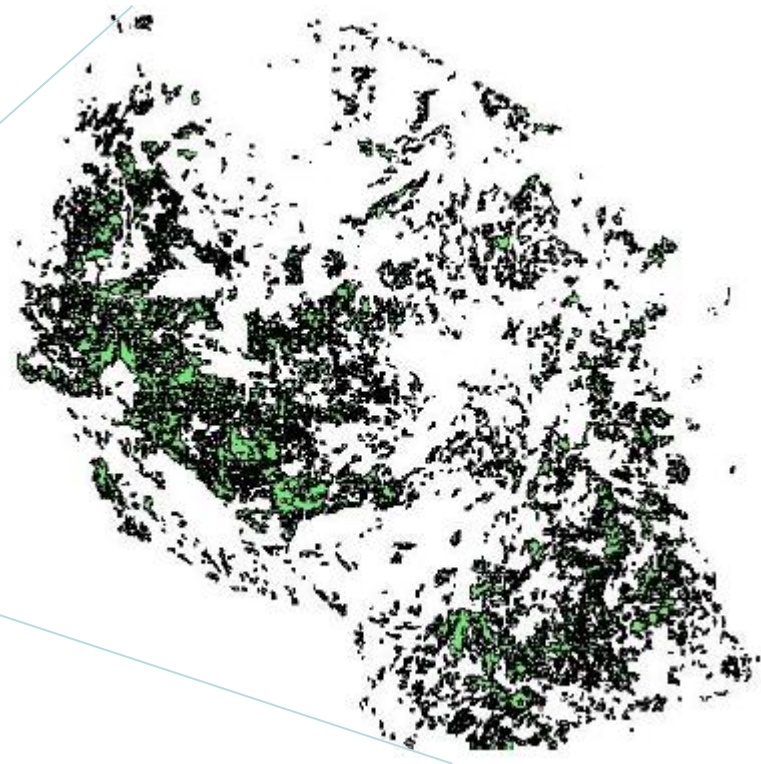
Skin Density
Subject 6 – Tf

Intensity of the ecogenic band (density): 0%= black - 100%= white



TERMINALIA SERICEA: BOTANY AND SUSTAINABILITY

T. Sericea is endemic mostly to Tanzania and Congo. Tall from 9 to 23 meters.



Woodland obtained by geodatabases.

TERMINALIA SERICEA: BOTANY AND SUSTAINABILITY

Improves the soil quality.

Favourable to a general balance of the **environment.**

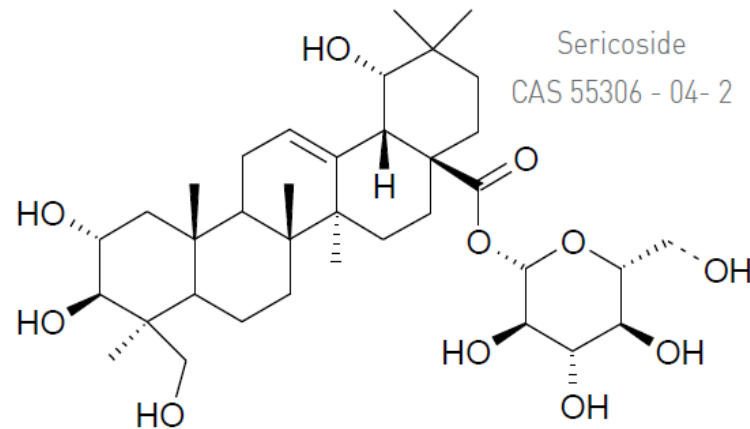


Indena is committed to sustainability by the proprietary SuSo program. SuSo means Sustainable Sourcing (**environmental, social and ethical** aspects).

SERICOSIDE: HISTORY AND FACTS

INCI NAME: Sericoside OR Terminalia sericea Bark/Root extract

Sericoside is a **pure molecule** obtained by *Terminalia sericea*.



The adjective *sericea*, in ancient Latin, means “**silky**, smooth as silk”.

In traditional medicine, both leaves and roots have been used as a remedy for **stomach ailments** and a concoction of the roots for to **heal wounds**.

SERICOSIDE: THE EFFICACY

Study:	Evaluation of the anti-ageing and skin toning effect
Experimental model	Volunteers required to apply a sericoside containing formula twice daily for 4 weeks (40 volunteers, 0.5% vs. blank).
Measured parameters	Redensification and anti sagging; under eye bags; dark circles; skin texture; anti-wrinkle
Indications	All in one anti-ageing. Anti wrinkles, skin texture, refreshed look.
Results	See next

Wrinkles

Eye bags

Dark circles

Texture

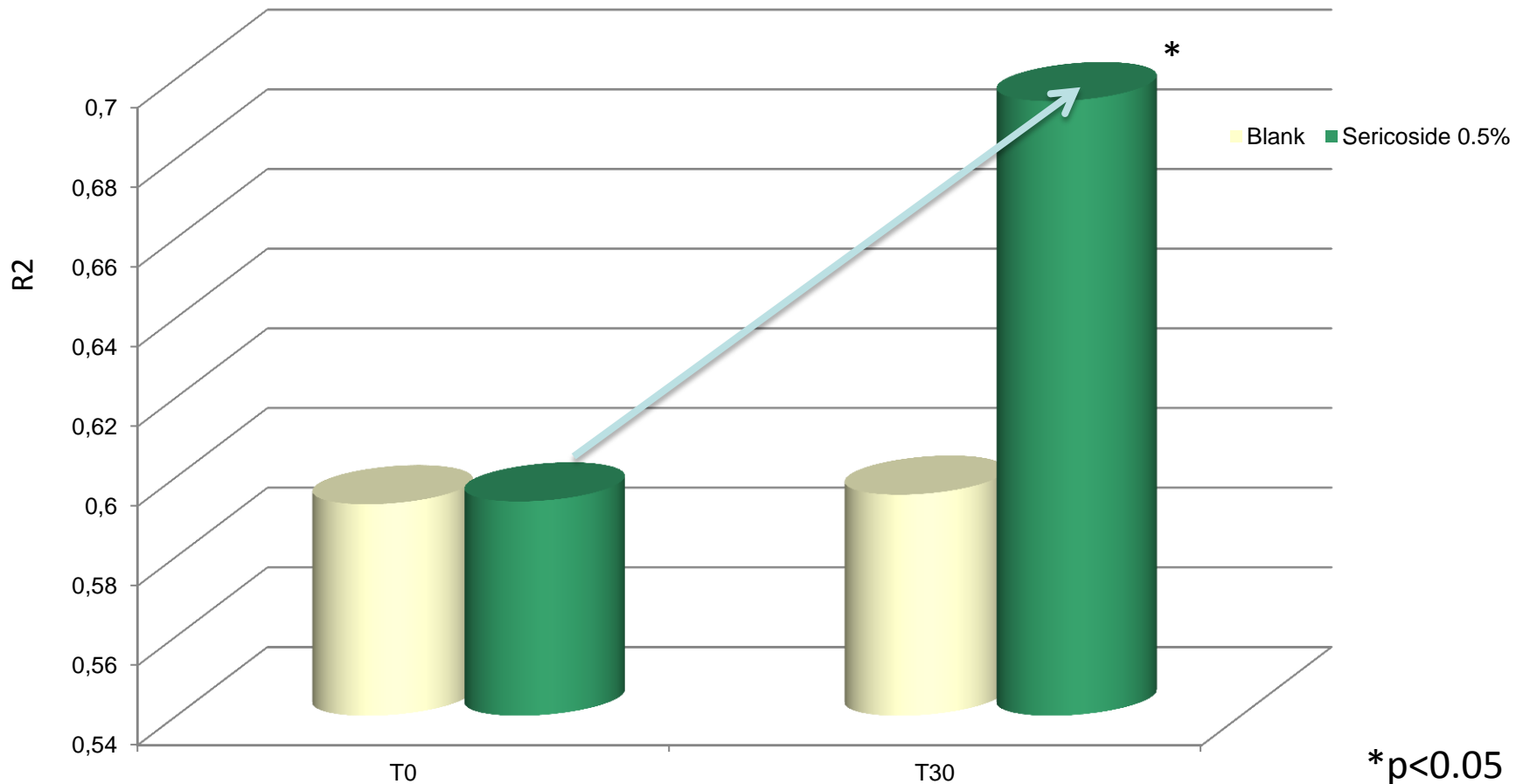
Redensification



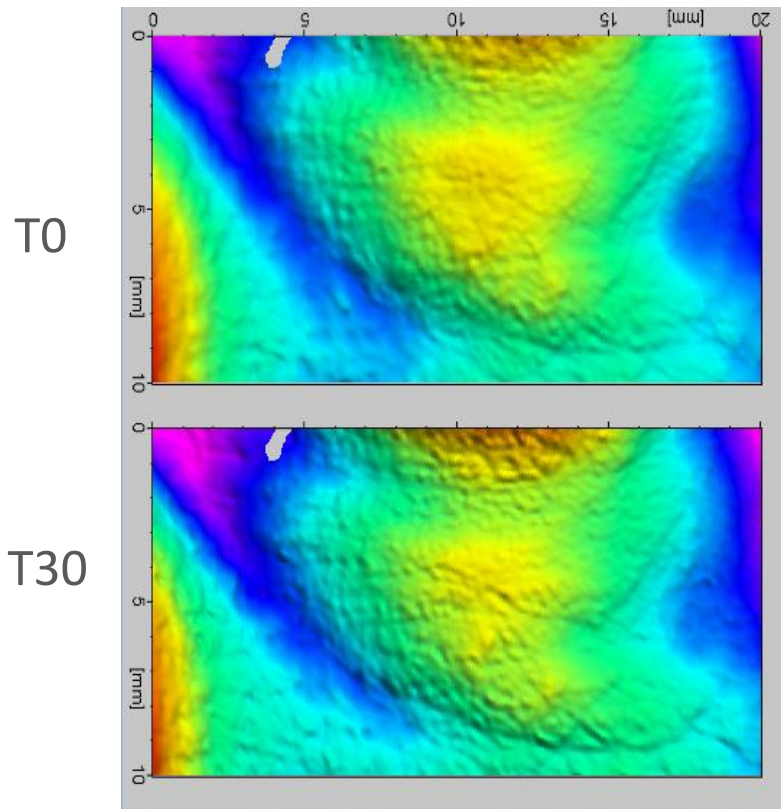
SERICOSIDE: REDENSIFYING (ANTI-SAGGING)

TONICITY (R2)

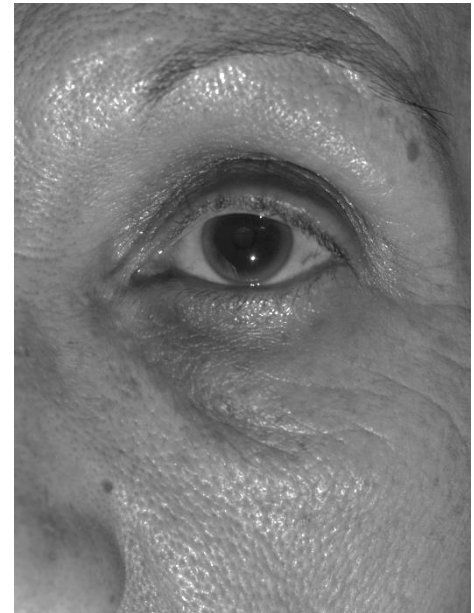
+19.8%



SERICOSIDE: EYE BAGS



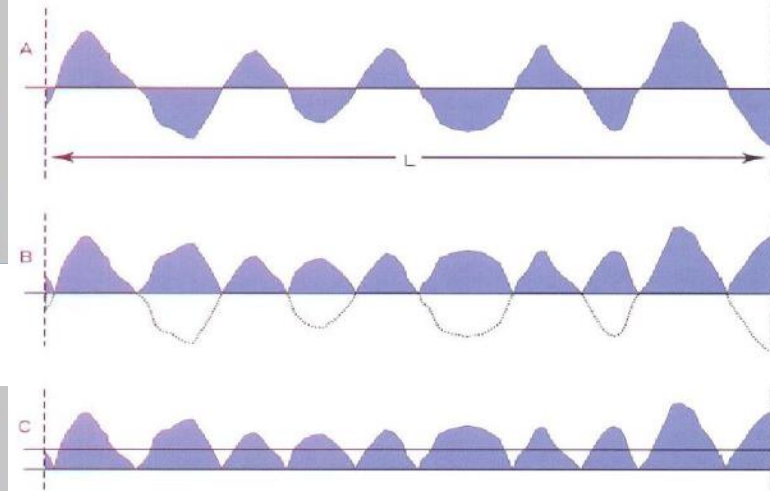
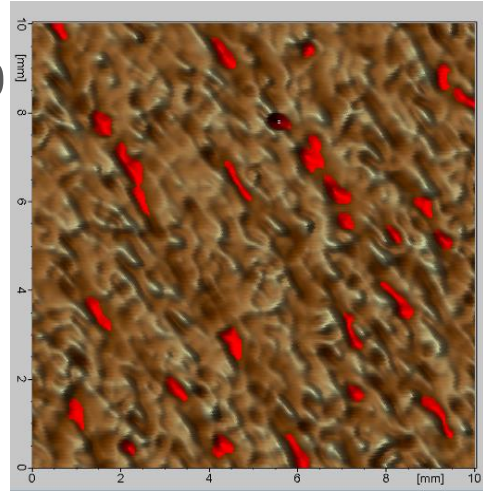
-20mm³



SERICOSIDE: SKIN TEXTURE



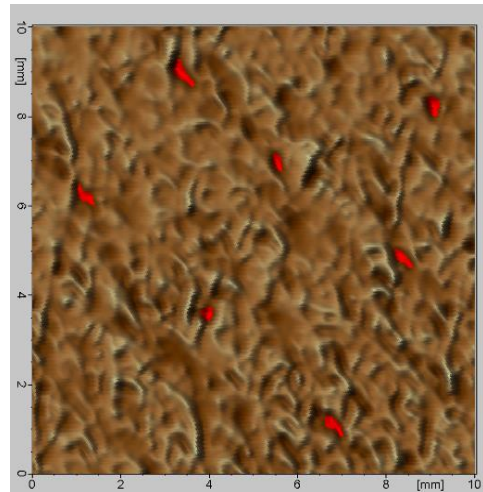
T0



Skin surface topography



T30







CENTELLA DERIVATIVES



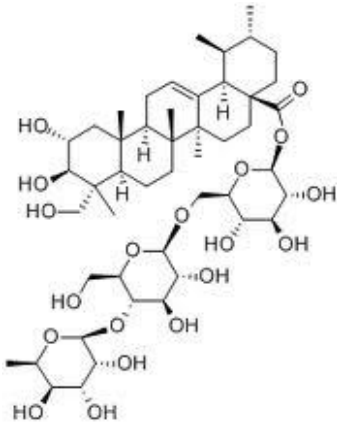
Centella has been **widely used both in Indian ayurvedic medicine** and as a traditional herbal medicine in Asia and India.

The traditional medicine of **Madagascar** has used for immemorial time for wound healing. Centella triterpenes strongly stimulate **collagen synthesis**.

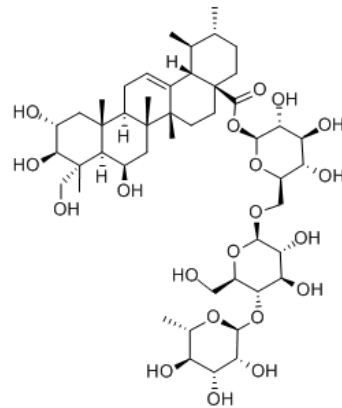
Centella leaves from **Madagascar** are the **most reliable source** (constant quality and high content of active principles).

CENDEVITA[®]: ACTIVE COMPOUNDS

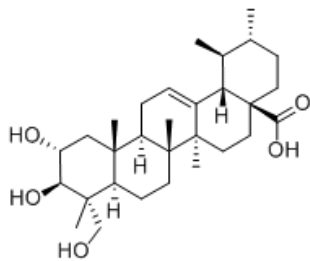
≥45.0% as asiaticoside, **madecassoside**, asiatic and madecassic acids
7.5% of the remaining part: biologically active **polyphenols**



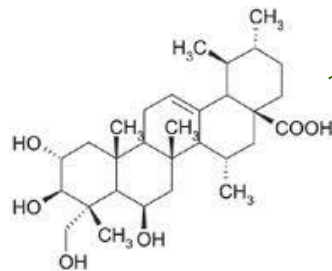
Asiaticoside



Madecassoside



Asiatic acid



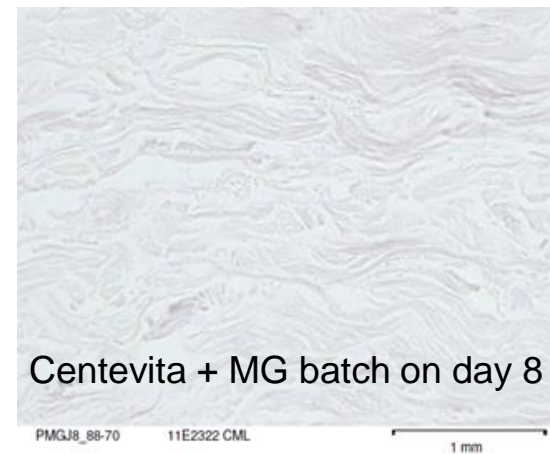
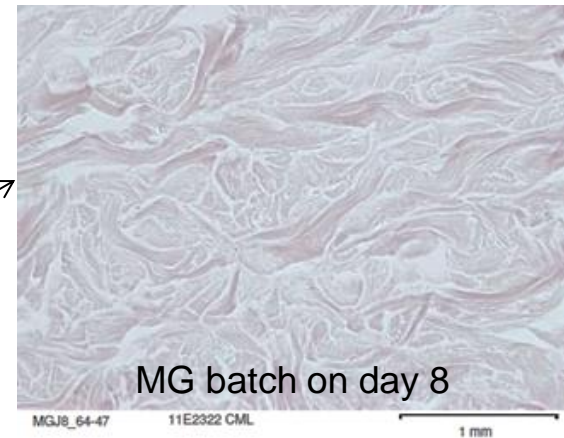
Madecassic acid



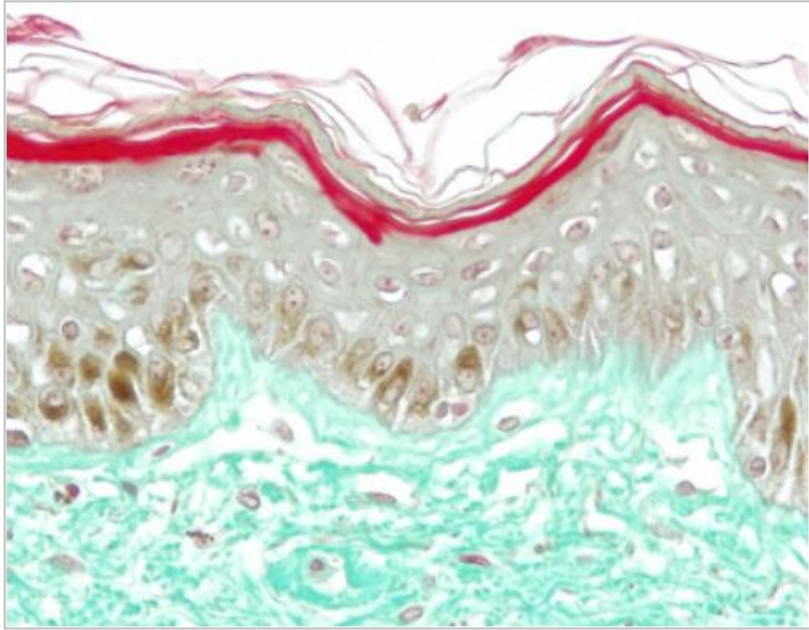
CENTEVITA[®]: EFFICACY IN VITRO

Study:	Anti-glycation on human skin explants
Experimental model	Human skin explants; glycation induced by methylglyoxal in culture medium. Centevita [®] applied at 1%
Measured parameters	General cells morphology; N-Carboxy-Methyl-Lysine (CML) immunostaining (microscopical observation)
Results	A total inhibition of carboxymethyl lysine induced by methylglyoxal; clear increase of the collagen network density in the papillary dermis.

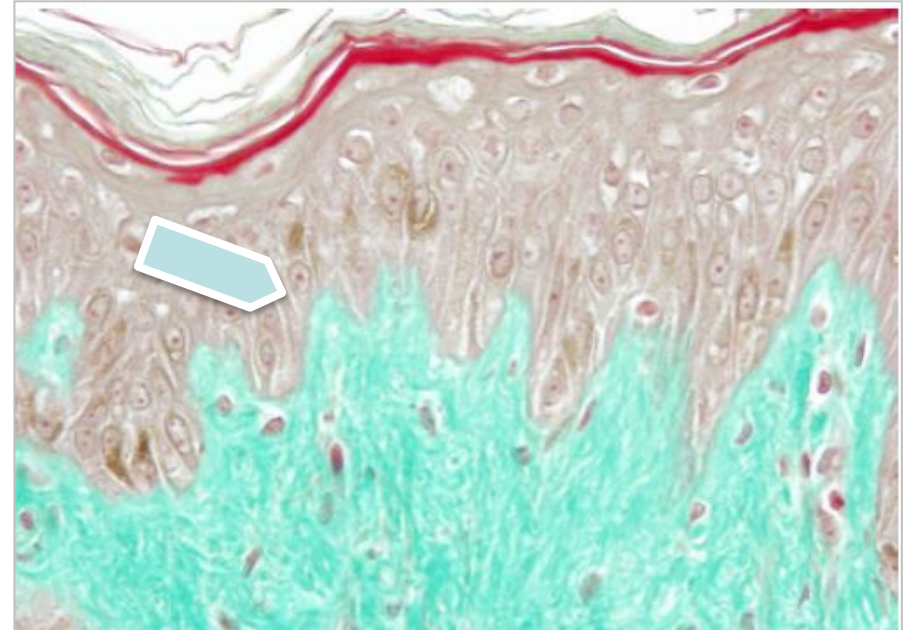
CENDEVITA[®]: INHIBITION OF GLYCATION



CENTEVITA® : COLLAGEN SYNTHESIS



Untreated



Centevita®

A **clear densification** of collagen network in the papillary dermis

CENTEVITA[®] : CLINICAL EFFICACY

Study:	Anti-ageing activity vs. placebo
Experimental model	Volunteers (20), Centevita [®] 0.5% O/W emulsion, 6 weeks.
Measured parameters	Anti ageing by replica analysis; firming and elasticity by Cutometer; collagen density by siascope.
Results	Collagen redensification observed in 70% of volunteers (p<0.05), tendential improvement of wrinkles appearance, significant improvement in skin elasticity and firmness.



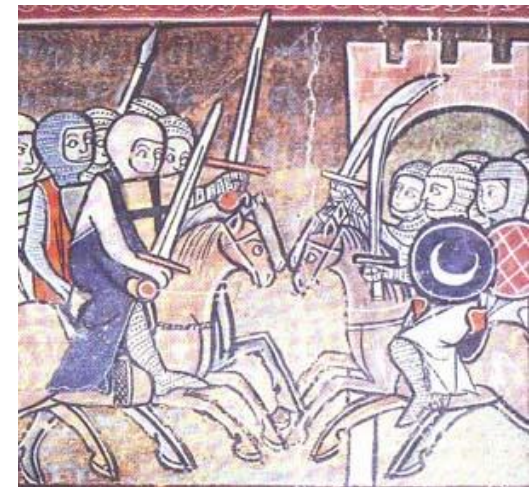
BOSEXIL®: HISTORY AND FACTS



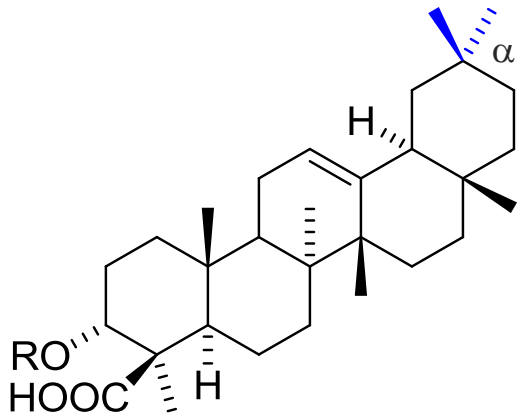
From **Boswellia serrata**, Frankincense is associated to religious ceremonies in both Judaism and Christianity.

Its use was reintroduced in Europe by the Franks Crusaders (Frankincense).

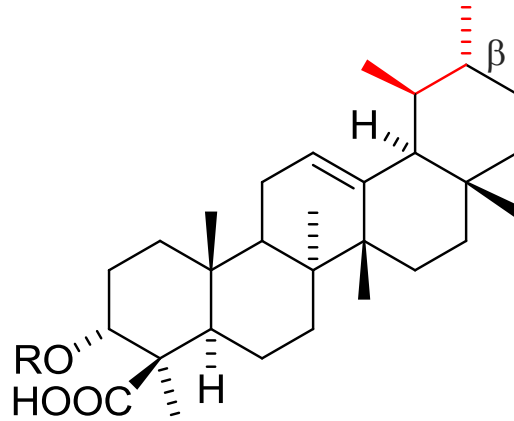
The resin is also known as olibanum, from the Arabic al-lubān (“the result of milking”).



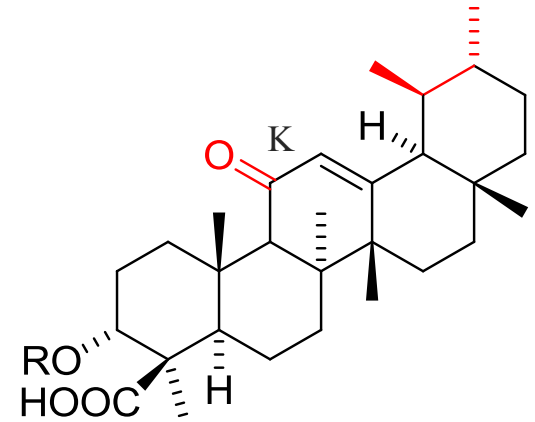
BOSEXIL®: THE BOSWELLIC ACID ALPHABET



α BA	R
A α BA	H
	Ac



β BA	R
A β BA	H
	Ac



KBA	R
AKBA	H
	Ac

The six boswellic acids accounting for the large majority of BA compounds in Bosexil®.

β Boswellic acid (β BA), Acetyl β boswellic acid (Ac β BA) are the most abundant in Bosexil®.

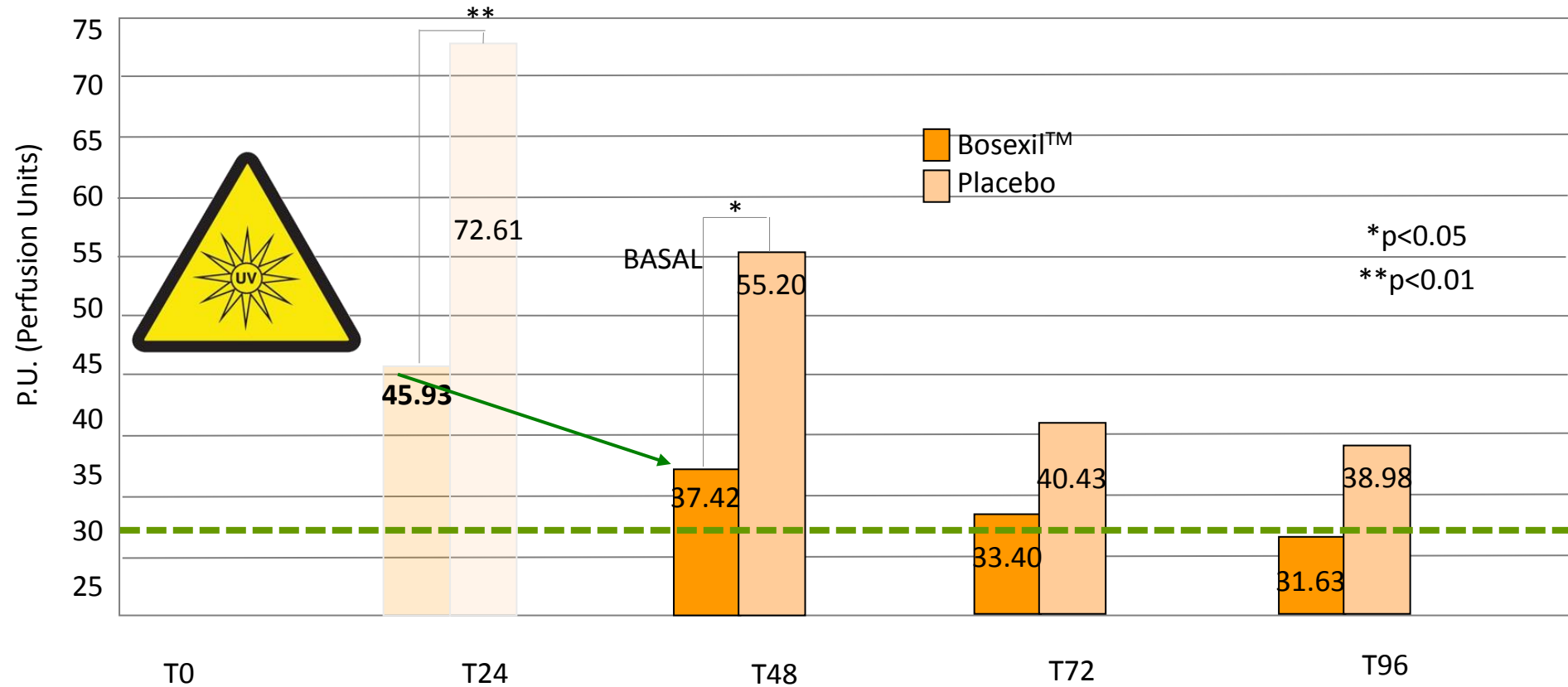
BOSEXIL[®]: THE CLINICAL EFFICACY



Study:	Single blind instrumental evaluation of the lenitive and recovery properties of Bosexil [®] on mechanical, physical (UV) and chemical skin damages
Experimental model	20 volunteers per challenge, test substance (1% O/W emulsion) vs. placebo
Measured parameters	TEWL; skin redness; skin blood micro-flow
Results	See next

BOSEXIL™: SOOTHING ON UV DAMAGE

MICRO-FLOW



Bosexil®: microflow reduction by **32.2%** ($p<0.05$) at **T48** (close to basal value before UV challenge).



If you truly love nature, you
will find beauty everywhere.

Vincent van Gogh

INDENA TODAY

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