

DANDRILYS®

LONG-LASTING ANTI-DANDRUFF & SCALP MICROBIOTA MODULATOR

FROST & SULLIVAN
2014 INNOVATION



HAIR

DANDRILYS®

PHYTOBIOACTIVE



> HAIR ISSUE STUDIED BY GREENTECH

DANDRUFF & IRRITATED SCALP

> Dandruff is a scalp disorder affecting up to 50% of world population (Piérard-Franchiment *et al.*, 2006) and tending to affect men more than women. Dandruff causes itchy and flaking skin with mild inflammation (it is a mild form of seborrheic dermatitis) (Schartz *et al.*, 2013). Beside discomfort and bad aspect of scalp, dandruff also has social and psychological impact, affecting self-esteem and confidence (Manuel and Ranganathan, 2001).

Current solutions include Zinc Pyrithione, featuring a strong efficacy but also unpleasant side effects: skin irritation, dryness or allergies, leading to recurrent regulatory reviews. Greentech designed a natural active ingredient to cleanse scalp and efficiently eliminate dandruff, redness and sebum, with a care effect on scalp microbiota. For a healthy scalp.

> ACTIONS

- Rebalances scalp bacteriobiota & mycobiota
- Rapidly eliminates dandruff, with a 72-hour action
- Complete long-lasting action: anti-dandruff, anti-itching & sebum control
- Promotes a healthier scalp

COMPOSITION

	TITRATION
SPECIFIC SAPONINS (JUJUBOSIDES)	> 10% DM
POLYSACCHARIDES & SUGARS	≈ 30% DM

ORIGIN

Sourced from *Ziziphus joazeiro* barks, traditionally used as plant-based mild detergent, anti-dandruff & hair cleanser.



> COSMETIC USES

- ▶ Anti-dandruff daily shampoo & hair conditioner
- ▶ Oil control hair care
- ▶ Sensitive scalp hair products
- ▶ Purifying hair products
- ▶ Scalp health booster
- ▶ Scalp microbiota modulating products

> GREENTECH INNOVATION



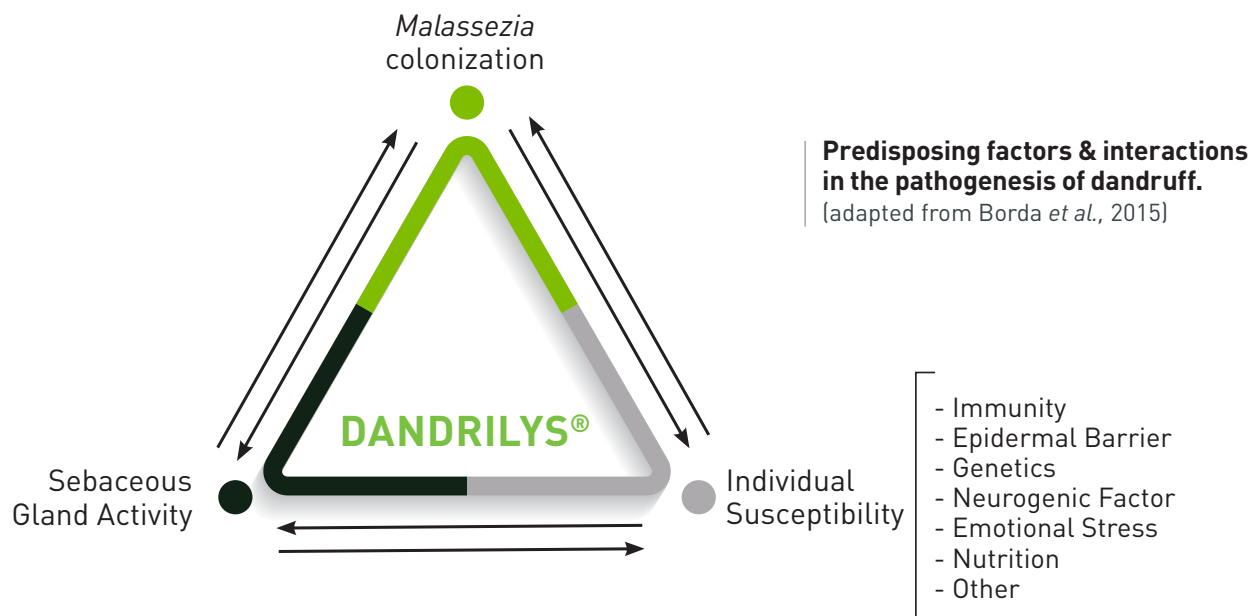
- > **NATURAL & SAFE ALTERNATIVE TO ZINC PYRITHIONE**
- > **MICROBIOTA-POWERED ANTI-DANDRUFF FOR A HEALTHIER SCALP :**
REBALANCES BACTERIOBIOTA + MYCOBIOTA
- > **LONG-LASTING ACTION, ANTI-DANDRUFF, ANTI-ITCHING & SEBUM CONTROL**

> A SYSTEMIC APPROACH OF DANDRUFF (SCALP PHYSIOLOGY + MICROBIOTA)

> Dandruff (also known as *Pityriasis capitis*) is characterized by itchy and flaky scalp with mild inflammatory reaction. It is a mild form of seborrheic dermatitis (Schwartz *et al.*, 2013).

As summarized in the figure below, there are several extrinsic factors (like lack of hygiene, excessive use of hair sprays/gels/wax...) and intrinsic factors (like scalp microbiota dysbiosis, individual susceptibility, hormonal imbalances...) that seem to play a role in dandruff formation.

More precisely, this inflammatory chronic disorder is related to scalp skin barrier disruption, epidermal cellular proliferation and differentiation, as well as shifts in gene expression patterns, and in cytokine and lipid production (Bonnist *et al.*, 2014).



The scalp has a biotic network out of which *Staphylococcus spp.*, *Propionibacterium spp.* and *Malassezia spp.* are known components (the two first being part of bacteria and thus bacteriobiota, the later being part of yeast and thus mycobiota).

Dandruff has been closely associated to a scalp microbiota dysbiosis, with a disbalance in the proportion of these major fungal and bacterial population colonizing the scalp (Park *et al.*, 2012). More precisely, the central dandruff hypothesis remains that the lipophilic yeast *Malassezia*, previously known as *Pityrosporum*, is the main causative agent of dandruff. Indeed, on the dandruff-afflicted scalp, the level of *Malassezia* increases to almost double the normal level. It has been found that some metabolic products of tryptophan produced by *Malassezia*, for example, indole derivatives, are the main cause of dandruff.

Aware of these mechanisms causing dandruff, GREENTECH R&D has developed a natural solution based on specific saponins (juzubosides) from Joazeiro bark to efficiently and quickly treat dandruff and rebalance scalp microbiota for a long-lasting effect.

> PROVEN EFFICACY : Clinical Study 1

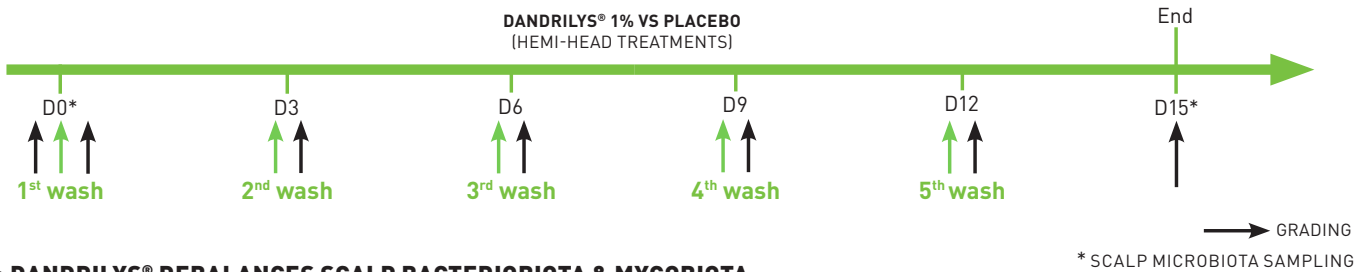
IN VIVO TESTS

CLINICAL STUDY DESIGN

- > 22 male subjects (40-65 yo) with all hair & scalp types (dry-greasy-normal):
 - 12 with adherent dandruff score ≥ 2.5 and total dandruff score ≥ 4 . Shampoo: DANDRILYS® 1% vs Placebo
 - 10 with healthy scalp (control group). No treatment

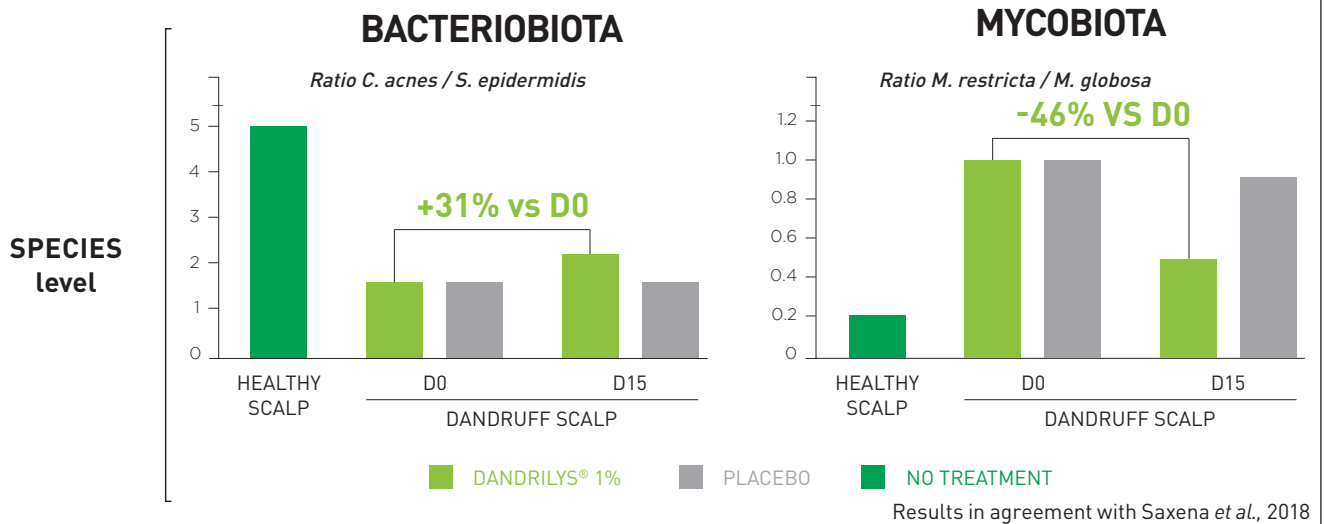
EVALUATION PARAMETERS

- > Scalp microbiota (high throughput DNA sequencing; bacteria: 16S ribosomal RNA; fungi: ITS1 ribosomal DNA)
- > Total dandruff + Erythema/Irritation (for both grading; 0-5)



• DANDRILYS® REBALANCES SCALP BACTERIOBIOTA & MYCOBIOTA

WITH DANDRILYS® (at D15 vs D0)



DANDRILYS® rebalances the BACTERIOBIOTA & MYCOBIOTA of scalp with dandruff towards a healthy scalp microbiota

• DANDRILYS® DECREASES BOTH DANDRUFF & ITCHING

ANTI-DANDRUFF

-59%****

AFTER 2 WASHES (D3)

-86%****

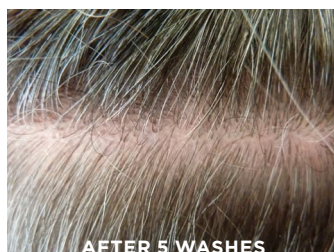
AFTER 4 WASHES (D9)

ANTI-ITCHING

-54%*

-83%**

*p<0.05; **p<0.01; ****p<0.0001 vs D0. Significant differences also vs placebo



Illustrative pictures after 5 washes (12 days)

Double blind test on 23 subjects with middle to high level of dandruff (after washout). Shampoo with DANDRILYS® 1% vs placebo.

> PROVEN EFFICACY : Clinical Study 2

IN VIVO TESTS

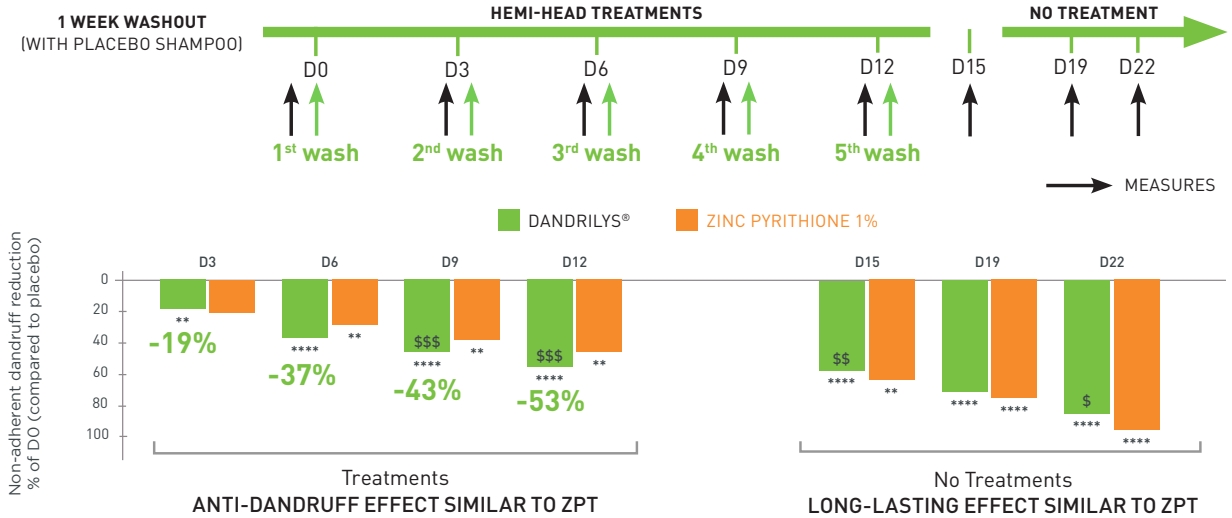
• DANDRILYS®: A SAFE & NATURAL ALTERNATIVE TO ZINC PYRITHIONE

CLINICAL STUDY DESIGN

- > **34 subjects** with middle to high level of dandruff (after washout):
- **23 volunteers** : Shampoo with DANDRILYS® 1% vs Placebo
- **11 volunteers** : Shampoo with DANDRILYS® 1% vs Zinc Pyrithione 1% (anti-dandruff benchmark; ZPT)

EVALUATION PARAMETERS

- > **Non-adherent dandruff** (expert dermatologist grading; 0-10)
- > **Scalp sebum** (Sebumeter®)



% DANDRILYS® vs D0, ** p<0.01, **** p<0.0001 vs D0, \$ p<0.05, \$\$ p<0.01, \$\$\$ p<0.001 vs Placebo, No significant difference between DANDRILYS® and ZPT

72H

LONG-LASTING EFFECT

-37%
After 2 washes

DANDRUFF VS D0

33%

After 2 washes

MORE EFFECTIVE VS ZPT

• DANDRILYS® HAS VISIBLE EFFECTS VS D0

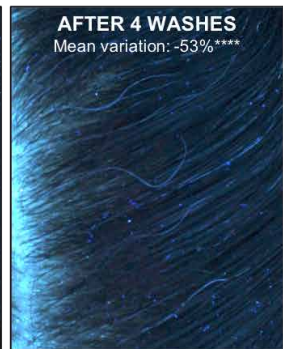
TREATMENT WITH THE SHAMPOO DANDRILYS® 1% VS D0

D0T0

D6

D12

D19

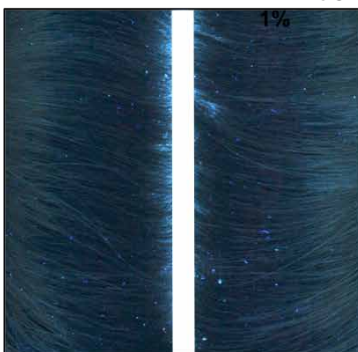


Standardized photographs; dandruff = small blue dots
**** p<0.0001 vs D0

D0T0 – BEFORE TREATMENT

ZPT 1%

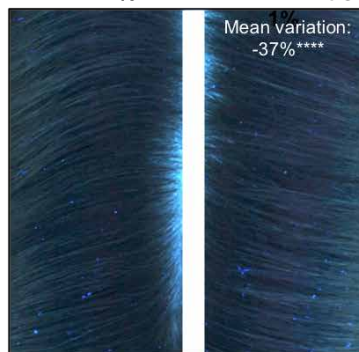
DANDRILYS®



D6 – AFTER 2 WASHES

ZPT 1%

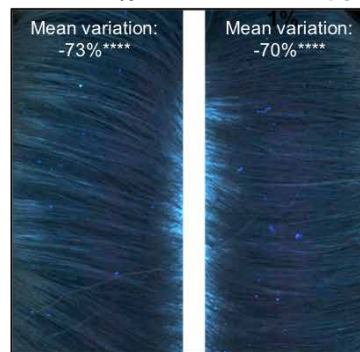
DANDRILYS®



D19 – 7 DAYS AFTER TREATMENT

ZPT 1%

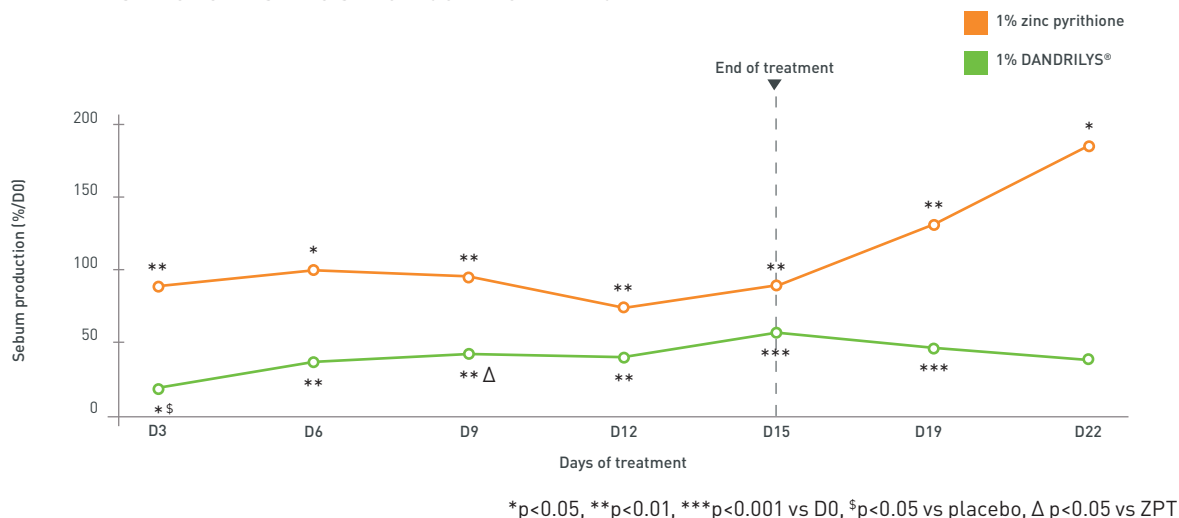
DANDRILYS®



Standardized photographs; dandruff = small blue dots
p<0.01; ** p<0.0001 vs D0

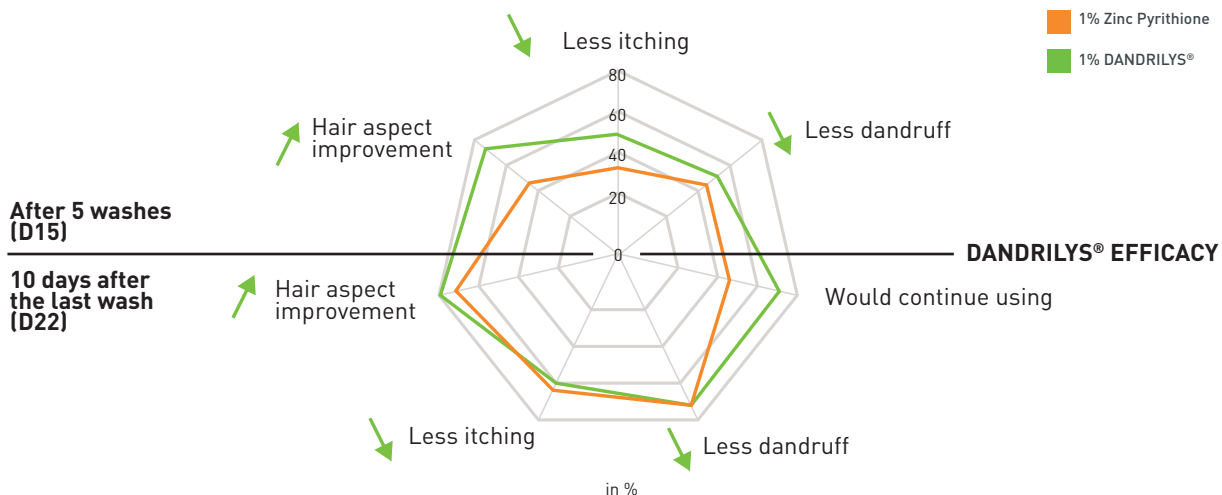
DANDRILYS® is a natural, effective and safe alternative to Zinc Pyrithione 1%.

• **DANDRILYS®: LONG-LASTING SEBUM CONTROL EFFECT**



DANDRILYS® regulates sebum production DURING & AFTER treatment (contrary to Zinc Pyrithione 1% that has a rebound effect).

• **SELF-ASSESSMENT**



DANDRILYS® performs better than Zinc Pyrithione from a consumer perception.

TECHNICAL INFORMATION

FORMULATION

Concentration for use: 1-2%
pH for use: 4-10

Caution for use:

Add in formulations at 35-40 °C, while cooling or at any time in cold preparation.

TECHNICAL DATA

Characteristics

Organoleptic	Appearance: liquid Colour: Amber to dark brown
Solubility	Water [at 10%]: soluble

Storage

Keep in a dark place, in the original packaging, at an ambient temperature between 15 and 25 °C.

Tolerance tests (tested at 5%)

- Cutaneous irritation : very good skin compatibility
- Sensitization : very good skin compatibility
- Eye irritation : slightly irritant
- Mutagenicity: non-mutagenic
- Phototoxicity: non-phototoxic

INCI name: Water, Propanediol, Zizyphus joazeiro Bark Extract

Preservative: None (exists in versions with preservatives)

Authorized: China & COSMOS



Raw material approved by ECOCERT GREENLIFE, according to COSMOS Standard

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& SCALP MICROBIOTA MODULATOR