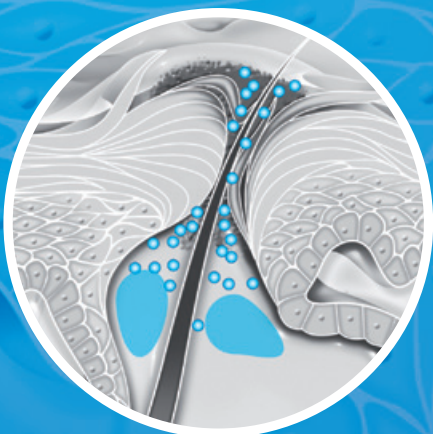


**LA ROCHE-POSAY**  
LABORATOIRE DERMATOLOGIQUE

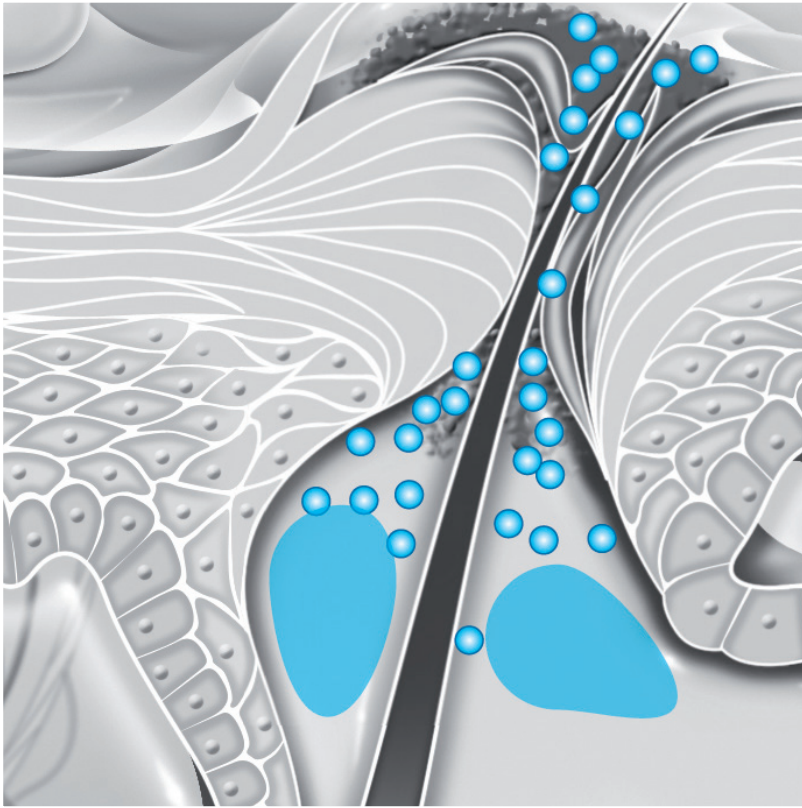
# **EFFACLAR** DUO (+)



October 2018. Document exclusively for healthcare professionals

**CLINICAL EVIDENCE**

LA ROCHE-POSAY. COMMITTED TO DERMATOLOGY.

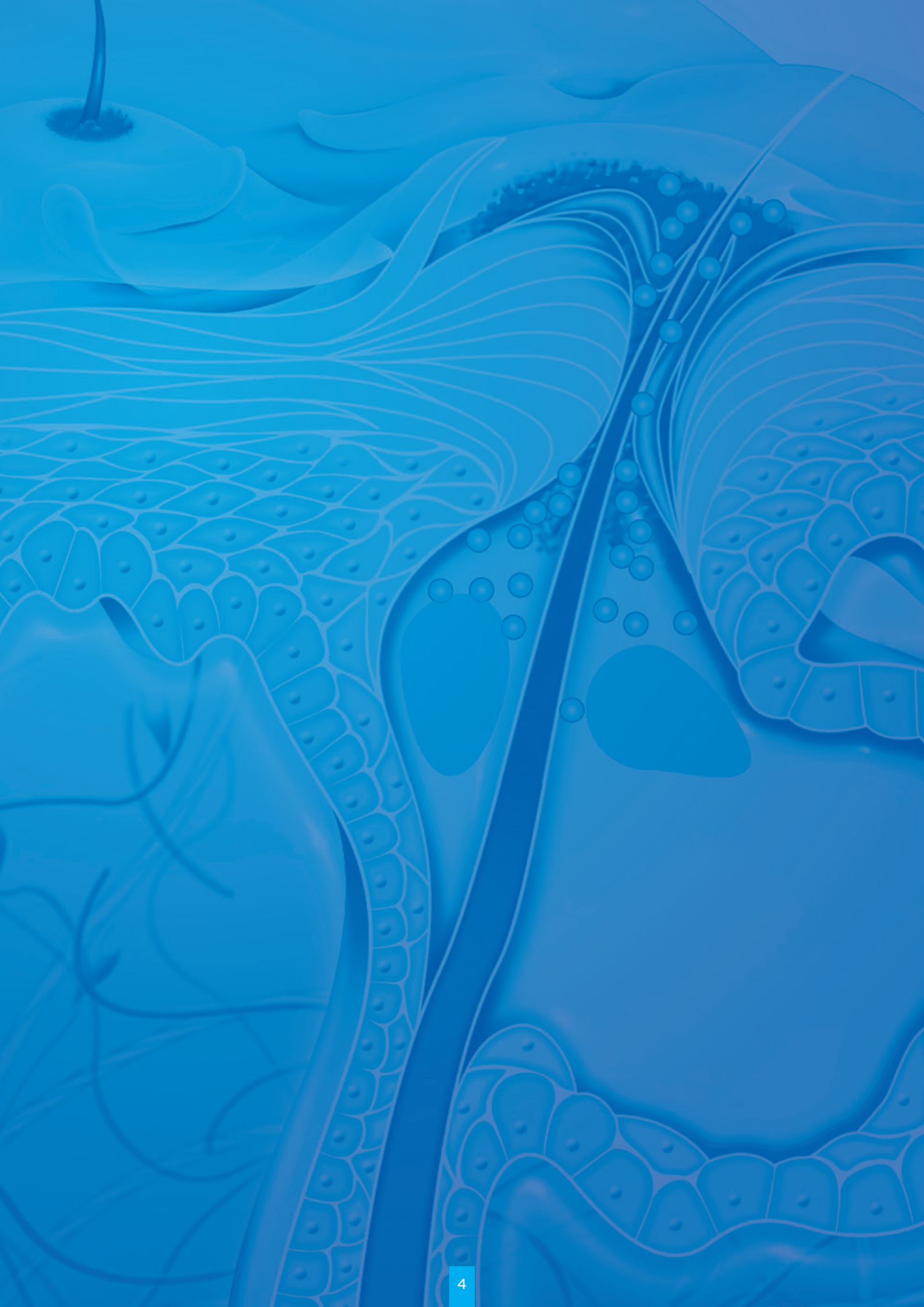


## EDITORIAL

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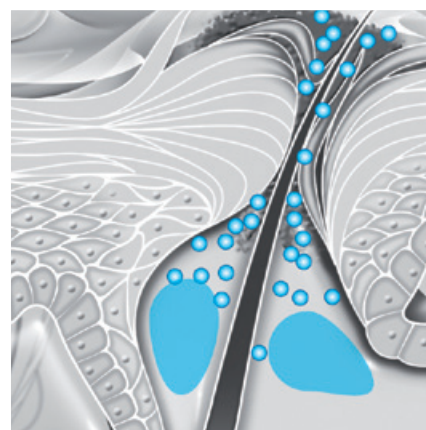
Acne is a major skin concern for teenagers and also for adults, that truly affects quality of life and it is one of the main reasons for consultations in dermatology.

In this brochure, you can find several references of publications concerning studies carried out by La Roche-Posay, and scientific posters accepted in many international dermatological congresses: these elements allow new insights on the reality of this pathology and on the management of patients.





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# 1 IMPACT OF ACNE ON QUALITY OF LIFE: A REAL-LIFE STUDY

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Acne mainly affects teenagers with often a negative impact on quality of life and self-image. Over the past decade, however, adult acne has increased in frequency.

The impact on quality of life is proportional to the severity of acne, with implications for self-esteem, body image and relationships with others.

A self-administered digital questionnaire, created by the group of experts dermatologists co-authoring this study, allows to measure this impact on more than 1000 patients.

- Scientific poster European Academy of Dermatology and Venereology 2018:  
**Mild to moderate acne relapses and repercussions: results of a real-life study.**
- Scientific poster European Academy of Dermatology and Venereology 2018:  
**Acne and absenteeism: results of a real-life study.**

## INTRODUCTION

Acne is the most common inflammatory skin disease in France, as recently confirmed (SFD). Acne is also the most frequent reason for consulting a dermatologist. Interestingly, however, no objective data on the frequency of these relapses has ever been obtained.

## MATERIAL AND METHODS

An online self-administered survey was provided to French patients suffering from acne. The study was determined by the dermatologist. To ensure a homogeneous assessment, the study was multicentric (400 dermatologists were called upon) real-life study. The quality of life was assessed by the second non-specific [SF-12].

## RESULTS

1052 patients suffering from acne were included but only 1048 patients were considered for the analysis: 42.7% classified as having mild acne, 41.4% moderate acne and 15.8% severe acne.

44.1% of respondents reported having had acne relapses: 58% among those aged 25 and over versus 40% among those under the age of 25. The average age of subjects in the relapse group was significantly higher than in the group without relapse: respectively  $21.36 \pm 7.81$  years versus  $19.36 \pm 6.95$  years.

Among those with relapses, 92.7% reported multiple relapses within the year, with 74.4% in the same area and 65.8% with the same severity. 67% of patients reported feeling that acne leaves marks, 37% reported scars, 24% reported both. Furthermore, 35.14% of patients with relapses expressed a feeling of fatality. CADI score was significantly altered in the group with relapses ( $5.7 \pm 3.4$  versus  $5 \pm 3.3$ ). In addition, in the group suffering from relapses, the CADI score was significantly more altered in subjects with marks and scars (6.8 vs 5.9). If the physical dimension of SF-12 was not altered, the mental dimension was significantly more altered in the relapse group ( $42.7 \pm 11$  versus  $41 \pm 10.7$ ).

## DISCUSSION

Few studies have considered the frequency of acne relapses and their impact. This is the first French study, which shows a high relapse rate (45%), reoccurring within a year. It is associated with an alteration in the quality of life and a certain feeling of fatality.



# REPERCUSSIONS: RESULTS OF A REAL-LIFE STUDY

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med by the “Objectif Peau” study published by the French Society of Dermatology  
stingly, dermatologists have noticed an increase in the frequency of acne relapses.  
ed. This is the aim of our study.

acne that spontaneously consult their local dermatologist. The severity of the acne  
EA scale was used. This is a non-interventional (no alterations to the patient’s care),  
fe was assessed through 2 questionnaires: the first one specific to acne [CADI] and

	Mild acne n=437 (100%)	Moderate acne n=428 (100%)	Severe acne n=164 (100%)	P- value
<b>RELAPSE</b>				
No	249 (57)	228 (53)	89 (54)	0.84
Yes	188 (43)	200 (47)	75 (46)	
<b>RELAPSE LOCATION</b>				
Variable	27 (14)	42 (21)	23 (31)	0.11 0.01
Mostly in different areas	11 (6)	14 (7)	3 (4)	
Mostly in the same area	150 (80)	144 (72)	49 (65)	
<b>RELAPSE INTENSITY</b>				
Same intensity	141 (75)	135 (68)	30 (40)	0.77 <0.001
Less and less severe	25 (13)	23 (12)	6 (8)	
More and more severe	22 (12)	42 (21)	39 (52)	
<b>RELAPSE EMOTIONS</b>				
Sense of frustration	21 (11)	36 (18)	13 (17)	0.74 0.97 0.03
Sense of anger	57 (30)	65 (32)	25 (33)	
Sense of fatality	60 (32)	72 (36)	31 (41)	
Nothing specific	50 (27)	27 (14)	06 (08)	

	No relapse (n=566)	Relapse (n=463)	P- value
<b>SF12-MS</b>			
Mean (SD)	42.7 (11)	41 (10.7)	0.01
CI	[41.8-43.7]	[40-42]	
<b>CADI</b>			
Mean(SD)	5 (3.3)	5.7 (3.4)	<0.01
CI	[4.8-5.3]	[5.4-6.1]	

Abbreviations: CI, confidence interval; SF12-MS, SF12 mental score;  
CADI, Cardiff Acne Disability Index.

## INTRODUCTION

Acne is one of the most common skin diseases, which mainly affects teenagers. However, adult acne and acne relapses have both increased in frequency, for example in the “Objectifs Peau” study, recently published by the French Society of Dermatology, France, who now report an ever-increasing number of relapses. Acne has become a disease of adulthood, with a 60% prevalence of acne reported in women aged 20 to 29.

## MATERIAL AND METHODS

A self-administered digital questionnaire, created by the group of experts, was spontaneously consulted by their local dermatologist. To avoid any uncertainty, a responding subject. For the same reason, and to ensure homogeneous data, an interventional multicentric real-life study. Loss of productivity over the 30 days preceding the evaluation considered when an Index [CADI]. The CADI is a short questionnaire featuring five questions, designed to assess the loss of productivity over the 30 days preceding the evaluation.

## RESULTS

1052 patients suffering from acne were included but only 1048 patients were considered for the analysis:

84.1% were assessed as having minimal to moderate acne (mean age  $20.39 \pm 7.66$ ) and 15.9% severe acne (mean age  $19.46 \pm 6.19$ ,  $p < 0.005$ ).

25.6% of respondents reported an occupational activity (no difference vs severity). Among patients with a professional activity, 5.7% reported a work leave within the last 30 days. Absenteeism at college or university was also prominent, with 5.2% having been absent due to their acne. Minimal or moderate acne resulted in a loss of productivity of 4.4% in the former and 6.5% in the latter.

CADI score was more often altered in the group with a work leave or an absence from school  $9.4 \pm 3.32$  vs.  $5.0 \pm 3.23$ . In subjects with an absence of 4 days or more, the CADI score was further altered ( $11.7 \pm 3.25$ ).

## DISCUSSION

This study confirms previous results and assesses the loss of productivity due to acne. An average work leave of 1.61 days within the last 30 days has been evidenced even in subjects with minimal acne.

# RESULTS OF A REAL-LIFE STUDY

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agers, with often a negative impact on quality of life and self-image. Over the past decade, or yet unknown reasons. Acne is among the most common skin diseases, as confirmed by the tology (SFD). Likewise, this condition accounts for most consultations with dermatologists in long been considered a disease that mainly affects adolescents, though it may persist into 9 years versus 26% in those aged 40 to 49 years.

dermatologists co-authoring this study, was provided to patients suffering from acne who nty surrounding acne diagnosis, each diagnosis was established by the dermatologist of the assessment of acne severity, the Global Acne Severity (GEA) scale was used This is a non- days preceding evaluation was assessed based on work absenteeism in relation to acne for ol in relation to acne was taken into account for adolescent patients, with the number of days ay absence was declared. Quality of life was assessed by the specific Cardiff Acne Disability signed to be applied to adolescents and young adults suffering from acne (min0-max15).

	GLOBAL	no relapse	relapse	Pvalue
Absence in the last 30 days	5,7%	3.66%	6.64%	<0.01
Average number of missed days among subjects reporting an absence [mean +/- SD]	1.73±1.31	1.92±1.49	1.33±0.68	0.04
confidence 95% interval	[1.4.;2.1]	[1.4;1.8]	[1.0 ;1.7]	

POPULATIONS	< =20 yrs old			>20 yrs old		
	no relapse	relapse	P-value	no relapse	relapse	P-value
Absence in the last 30 days	3.66%	6.64%	<0.01	2%	11%	<0.01
Average number of missed days among subjects reporting an absence [mean +/- SD]	1.4±0.73	1.74±1.37	NS	1±1	2.1±1.61	<0.01
confidence 95% interval	[1.0 ;1.8]	[1.1 ;2.4]		[1 ;1]	[1.3 ;2.8]	

## 2 MANAGEMENT OF ACNE PATIENTS IN PRIVATE PRACTICE

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This part presents data resulting from surveys performed by dermatologists in private practice: the objective was to better know acne treatment strategies used in different countries – A= France B= Bresil C= Europe and D= World.

It also presents results about efficacy and tolerance of Effaclar DUO(+) when recommended as monotherapy or as adjunctive therapy to medication.

**A/ An investigational study of acne treatment in France.**

Seite S, Rougier A, Dreno B, Ann Dermatol Venereol. 2012 Oct;139(10):611-6.  
PMID : 23122372

**B/ Large-scale survey to describe acne management in Brazilian clinical practice.**

Seite S, Caixeta C, Towersey L. Clin Cosmet Investig Dermatol. 2015 Nov 9;8:571-7  
PMID: 26609243

**C/ Scientific poster European Academy of Dermatology and Venereology 2011:  
European observational study on the management of acneic patients.**

**D/ Scientific poster World Congress of Dermatology 2011:  
International observational study on the management of acneic patients.**



# EUROPEAN OBSERVATIONAL STUDY ON THE MANAGEMENT OF ACNEIC PATIENTS

B. DRENO<sup>1</sup>, A. ROUGIER<sup>2</sup>, S. SEITE<sup>1</sup>

<sup>1</sup>La Roche-Posay Dermatological Laboratories, Asnières, France, <sup>2</sup>Department of Dermato Oncology, Hôtel Dieu, CHU Nantes, France

## INTRODUCTION

Acne is one of the major reasons for dermatological consultation. Management seems standardized in particular for facial juvenile mild to moderate acne where topical treatments are used for low severity cases and topical treatments associated with systemic antibiotherapy for medium severity cases. The aim of this European observational study was to evaluate the management of mild to moderate acneic patients by dermatologists in private practice.

## MATERIAL AND METHODS

During this study, dermatologists practicing in 12 European countries were asked about their management of 5720 young acneic patients (out of isotretinoin treatment) mainly of mild to moderate grades (evaluated with the Global Acne Severity Scale or GEA scale) [1]. A questionnaire, containing information about patient's characteristics, severity of acne (GEA scale) and the prescribed therapy was completed by dermatologists at baseline and 2 months later. The therapeutic scheme prescribed according to the severity of acne was identified and evaluated and its tolerance and adherence (evaluated with the ECOB Scale) [2] were noted.

## RESULTS

In the panel evaluated, the higher the severity of acne was, the more the gender distribution was balanced, the younger the patients were and the more the presence of lesions on the trunk was noted.

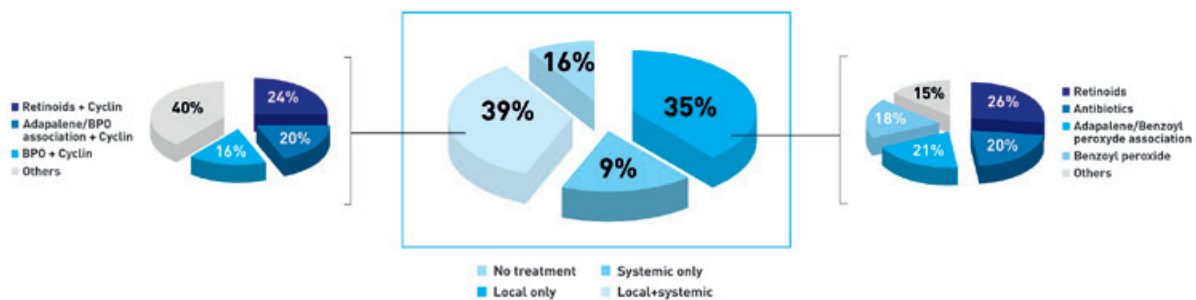
Patient's characteristics according to the degree of severity of their acne (GEA scale)

GEA grade (n=5720)	Gender		Age		Lesions on the trunk	
	F	M	<20	≥20	Yes	No
Grade 1 (n=647)	76%	24%	55%	45%	6%	94%
Grade 2 (n=2525)	74%	26%	55%	45%	18%	82%
Grade 3 (n=2307)	62%	38%	59%	41%	42%	58%
Grade 4 (n=241)	48%	52%	64%	36%	62%	38%

82% of patients showed a phototype II or III and 86% a severity of grade 2 or 3 (evaluated with the GEA scale).

This observational study highlights the complexity of the management of mild to moderate acneic patients, since in most cases dermatologists prescribed several local treatments (up to 3) associated with one or more systemic therapies (up to 3) in addition to a dermocosmetic.

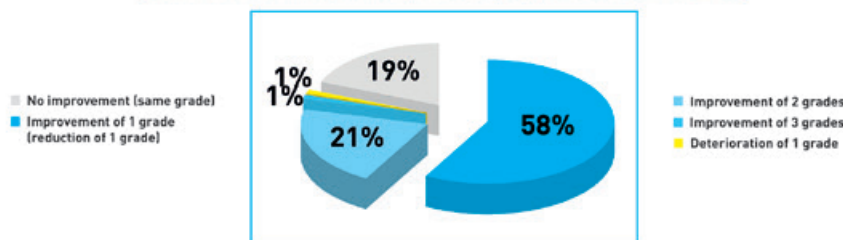
Percentage of patients (grade 2 and 3) by number and type of prescribed treatments



Dermatologists usually prescribe no treatment other than the application of a dermocosmetic product to their patients with very mild acne (Grade 1), one treatment, especially a topical one to their patients with mild acne (Grade 2) and two treatments (a combination of topical and systemic therapies) to their patients with moderate or severe acne (Grade 3 and 4).

The therapeutic scheme prescribed was efficient since 80% of patients' acne improved during the study (reduction of 1 grade or more).

Evolution of the clinical condition (GEA Grade) of patients between the 2 visits



The score of seborrhea decreased from  $4 \pm 2$  to  $3 \pm 1$  (mean  $\pm$  SD) between the 2 visits (reduction in 86% of patients).

For 90% of patients, dermatologists found interesting to combine therapeutic treatment with a cosmetic product in order to improve patient comfort and tolerance while maintaining and/or enhancing its effectiveness. Moreover, 84% of patients were satisfied with the efficacy of the prescribed cosmetic product. Tolerance of treatments was noted "good" or "excellent" for 91% of patients by dermatologists and for 88% of patients by auto-evaluation.

## CONCLUSION

This study highlights the complexity of the management of acneic patients and raises the question of adherence, a key factor for a successful treatment.

## REFERENCE

- Dreno B, Poli F, Pavlin H, Baylet C, Faure M, Chivot M et al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. *J Eur Acad Dermatol Venerol* 2011, 25: 43-48.
- Dreno B, Thiboutot D, Golzick H, Finlay AY, Layton A, Leyden JJ et al. Global Alliance to Improve Outcomes in Acne. Large-scale worldwide observational study of adherence with acne therapy. *Int J Dermatol* 2010, 49: 448-456.

# INTERNATIONAL OBSERVATIONAL STUDY ON THE MANAGEMENT OF ACNEIC PATIENTS

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## INTRODUCTION

Acne is one of the major reasons for dermatological consultation. Management seems standardized in particular for facial juvenile mild to moderate acne where topical treatments are used for low severity cases and topical treatments associated with systemic antibiotherapy for medium severity cases. The aim of this international observational study was to evaluate the management of mild to moderate acneic patients by dermatologists in private practice.

## MATERIAL AND METHODS

During this study, dermatologists practicing in 16 countries all over the world were asked about their management of 6345 young acneic patients (out of isotretinoin treatment) mainly of mild to moderate grades (evaluated with the Global Acne Severity Scale or GEA scale) (1). A questionnaire, containing information about patient's characteristics, severity of acne (GEA scale) and the prescribed therapy was completed by dermatologists at baseline and 2 months later. The therapeutic scheme prescribed according to the severity of acne was identified and evaluated and its tolerance and adherence (evaluated with ECOB Scale) (2) noted.

## RESULTS

In the panel evaluated, the higher the severity of acne was, the more the gender distribution was balanced, the younger the patients were and the more the presence of lesions on the trunk was noted.

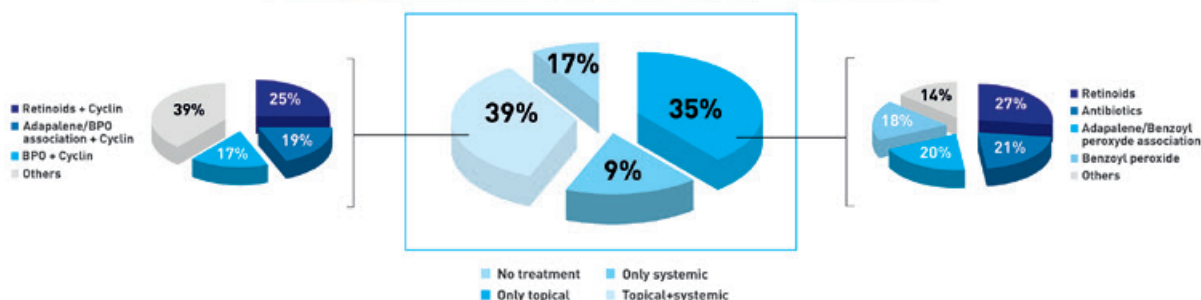
Patient's characteristics according to the degree of severity of their acne (GEA scale)

GEA grade (n=6137)	Gender		Age		Lesions on the trunk	
	F	M	<20	≥20	Yes	No
Grade 1 (n=702)	77%	23%	53%	47%	8%	92%
Grade 2 (n=2721)	76%	24%	54%	46%	19%	81%
Grade 3 (n=2472)	62%	38%	58%	42%	42%	58%
Grade 4 (n=242)	48%	52%	64%	36%	62%	38%

80% of patients showed a phototype II or III and 84% a severity of grade 2 or 3 (evaluated with the GEA scale).

This observational study highlights the complexity of the management of mild to moderate acneic patients, since in most cases dermatologist prescribed several topical treatments (up to 3) associated with one or more systemic therapies (up to 3) in addition to a dermocosmetic.

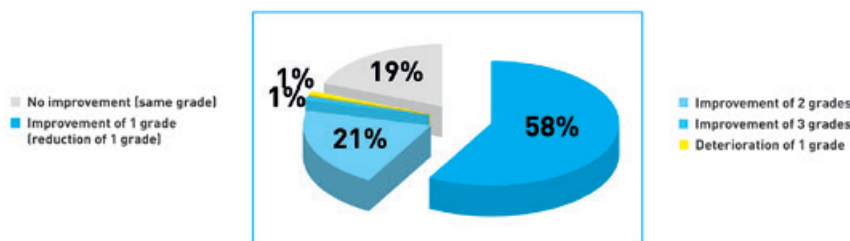
Percentage of patients (grade 2 and 3) by number and type of prescribed treatments



Dermatologists usually prescribe no treatment other than the application of a dermocosmetic product to their patients with very mild acne (Grade 1); one treatment, especially a topical one to their patients with mild acne (Grade 2) and two treatments (a combination of topical and systemic therapy) to their patients with moderate or severe acne (Grade 3 and 4).

The therapeutic scheme prescribed has been efficient, i.e. 80% of patients were improved during the study (reduction of 1 grade or more).

Evolution of the clinical condition (GEA Grade) of patients between the 2 visits



The score of seborrhea has decreased from  $5 \pm 2$  to  $3 \pm 2$  between the 2 visits (reduction in 86% of patients).

For 87% of patients, dermatologists found interesting to combine therapeutic treatment with a cosmetic product in order to improve patient comfort and tolerance while maintaining and/or enhancing its effectiveness. Moreover, 82% of patients were satisfied with the efficacy of the cosmetic product prescribed. Tolerance of treatments was noted "good" or "excellent" for 87% of patients by dermatologists and for 84% of patients by auto-evaluation.

## CONCLUSION

This study highlights the complexity of the management of acneic patients and raises the question of adherence, a key factor for a successful treatment.

## REFERENCE

- Dreno B, Poli F, Pawin H, Beylot C, Faure M, Chivot M and al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. *J Eur Acad Dermatol Venereol* 2011; 25: 43-48.
- Dreno B, Thiboutot D, Goldnick H, Finlay AY, Layton AJ, Leyden JJ and al. Global Alliance to Improve Outcomes in Acne. Large-scale worldwide observational study of adherence with acne therapy. *Int J Dermatol* 2010; 49: 448-456.



# 3 PREMENSTRUAL ACNE

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Premenstrual acne flare is a commonly reported phenomenon: this double blind randomized trial allows to characterize the disorder and to evaluate the efficacy and tolerance of Effaclar DUO(+) in monotherapy on a group of adult women.

- **Characteristics of premenstrual acne flare-up and benefits of a dermocosmetic treatment: a double-blind randomised trial.**

Saint-Jean M, Khammari A, Seite S, Moyal D, Dreno B. Eur J Dermatol. 2017 Apr 1;27(2):144-149  
PMID: 28251894

- Scientific poster European Academy of Dermatology and Venereology 2015:  
**Characteristic and control of the premenstrual acne flare up with a dermocosmetic: double blind randomised trial.**



# CHARACTERISTICS AND CONTROL OF THE PREMENSTRUAL ACNE FLARE UP WITH A DERMOCOSMETIC: DOUBLE BLIND RANDOMISED TRIAL

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## INTRODUCTION

Although several investigators have reported facial acne flare-ups during the luteal phase of the menstrual cycle (the premenstrual flare), this has been poorly investigated to date. We have performed a single-centre, controlled, randomised, double blinded, intra-individual (half-face) comparison with two objectives: the first was to clinically characterise the premenstrual acne flare-up in adult women in the absence of any acne treatment during 2 menstrual cycles using a standardised dermatological examination; the second objective was to demonstrate the benefit of a dermocosmetic product during one menstrual cycle.

## METHODS

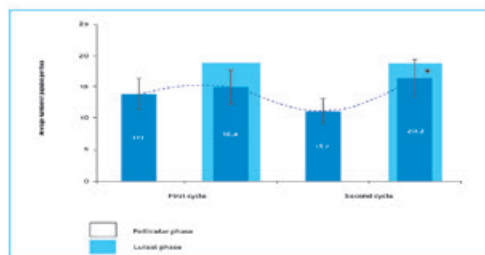
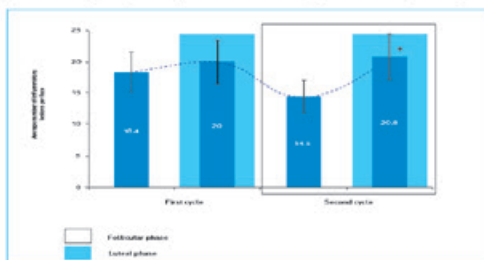
This comparative randomised study was performed on 32 women with premenstrual acne syndrome (GEA grade 2 and 3). Patients were first followed during 2 menstrual cycles (observational phase (cycles 1 and 2)) to quantify the number of lesions during (premenstrual) acne flare-ups. Secondly, the dermocosmetic formulation was applied twice daily on one half of their face and the placebo on the other half during one menstrual cycle (interventional phase (cycle 3)). All patients were observed at each luteal and follicular phase. The patients were instructed how to apply the products by a nurse in the study department. A total of seven study visits were performed: a screening visit followed by 2 visits during each menstrual cycle. The initial visit was planned during the follicular phase (between day 7 and day 12) and the second at the end of the luteal phase (between day 22 and day 28).



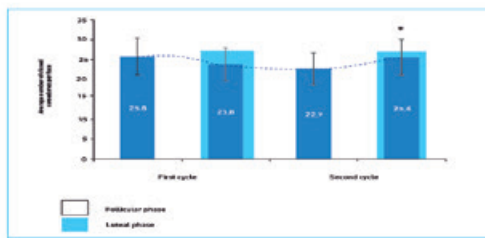
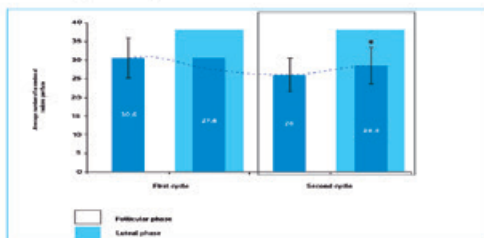
## RESULTS

This study confirms the clinical «feeling» of women with premenstrual acne flares. These flares are characterized with a higher number of inflammatory acne lesions and to a lesser extent, non-inflammatory lesions in the luteal phase compared to the follicular phase of the menstrual cycle.

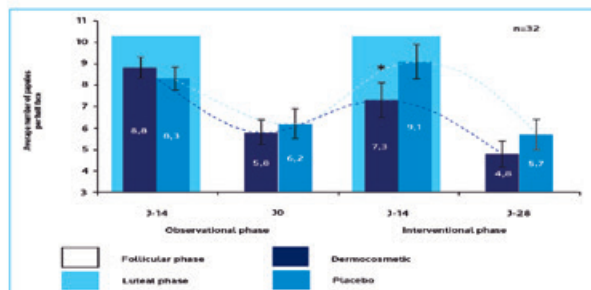
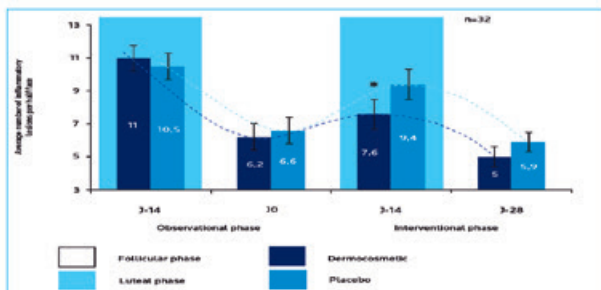
The mean number of superficial facial inflammatory lesions (papules and pustules) was significantly higher during the luteal phase than the follicular phase at the end of the second cycle (14.5 vs. 20.8,  $p=0.0005$ ). Of these superficial inflammatory lesions, only the number of papules was significantly higher (13.7 vs. 20.2,  $p=0.0008$ ). Papules increased in 74.2% of women.



The mean number of facial comedonal lesions (open and closed comedones) was also significantly higher during the luteal phase compared to the follicular phase at the end of the second cycle (25.6 vs. 26,  $p=0.04$ ). Only the number of closed comedones was significantly higher (25.6 vs. 22.7,  $p=0.008$ ). The increase of closed comedones was noted in 71% of women.



During the interventional phase, the half-face treated with the dermocosmetic formulation showed a significantly lower number of inflammatory lesions ( $p=0.01$ ) and particularly of papules during the luteal phase compared to the half-face treated with the placebo.



Additionally, the increased number of inflammatory lesions and particularly of papules between the follicular phase and the luteal phase was significantly less ( $p=0.004$ ) on the half-face treated with the dermocosmetic formulation. Tolerance of the dermocosmetic formulation was rated as good or excellent.

## CONCLUSION

This study on the one hand enables premenstrual acne flare-up in adult women to be better characterised and in particular to prove that there is a significant increase in the number of papules and to a lesser extent of closed comedones. On the other hand, it reveals the benefit of a facial care regimen combined with a dermocosmetic, containing lipohydroxy acid, salicylic acid, linoleic acid, niacinamide and piroctone-olamine, appropriate for this premenstrual inflammatory flare-up.

## REFERENCES

1. Poli E, Dreno B, Verschoor M. An epidemiological study of acne in female adults: results of a survey conducted in France. *J Eur Acad Dermatol Venereol* 2001; 15: 541-5
2. Geller L, Rosen J, Frankel A, Goldstein G. Premenstrual flare of adult acne. *J Clin Aesthet Dermatol* 2015; 7: 30-4
3. Shaw JC. Low-dose adjunctive spirocyclic in the treatment of acne in women: a retrospective analysis of 85 consecutively treated patients. *J Am Acad Dermatol*. 2000; 43: 490-502
4. Stoll S, Shalita AR, Webster GF, Kaplan R, Danesh S, Penstein A. The effect of the menstrual cycle on acne. *J Am Acad Dermatol*. 2001; 45: 957-60
5. Lucky AW. Quantitative documentation of a premenstrual flare of facial acne in adult women. *Arch Dermatol*. 2004; 140: 423-4



# 4 EFFACLAR DUO(+) EFFICACY IN COMBINATION OR RELAY OF BENZOYL PEROXIDE (BPO)

Two randomized double blind placebo controlled studies have been performed to evaluate the efficacy of Effaclar DUO(+) on patients treated in combination or relay of 5% BPO treatment.

1. EFFACLAR DUO(+) with 5% BPO vs placebo with 5% BPO:  
almost similar efficacy, and improved quality of life in the EFFACLAR DUO(+) and BPO group.
  2. EFFACLAR DUO(+) or placebo after a 5 % BPO treatment:  
relapse prevention up to 3 months when using EFFACLAR DUO(+) daily after stopping 5% BPO treatment.
- Scientific poster European Academy of Dermatology and Venereology & World Congress of Dermatology 2011:  
**Randomized double blind placebo-controlled study of a new formulation in combination with 5% BPO in the treatment of facial acne vulgaris.**
  - Scientific poster European Academy of Dermatology and Venereology & World Congress of Dermatology 2011:  
**Randomized double blind placebo-controlled study of a new formulation used after 5% BPO in the treatment of facial acne vulgaris.**

# RANDOMIZED DOUBLE BLIND PLACEBO-CONTROLLED STUDY OF A NEW FORMULATION IN COMBINATION WITH 5% BENZOYL PEROXIDE IN THE TREATMENT OF FACIAL ACNE VULGARIS

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## INTRODUCTION

Benzoyl peroxide (BPO) is a highly lipophilic oxidizing agent with bactericidal and keratolytic effects. It is a gold standard for papular-pustular acne. However, its use can cause mild skin irritation and dryness. It would be interesting to combine BPO with other treatments in order to obtain the same clinical efficacy on inflammatory and non-inflammatory acne lesions and a better tolerability and, therefore, compliance. The aim of this randomized double-blind placebo-controlled study was to evaluate a new formulation containing: Lipohydroxy acid (LHA), Salicylic acid (SA), Linoleic acid, Niacinamide and Piroctone Olamine in combination with 5% benzoyl peroxide (BPO) in subjects with acne vulgaris.

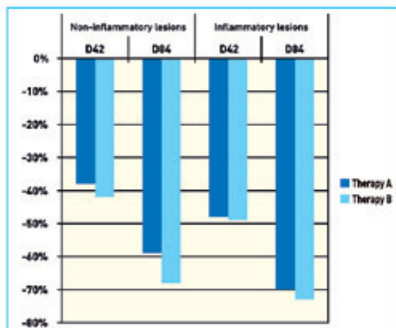
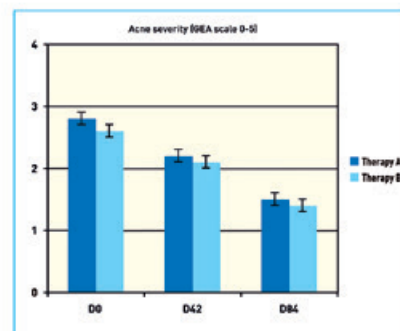
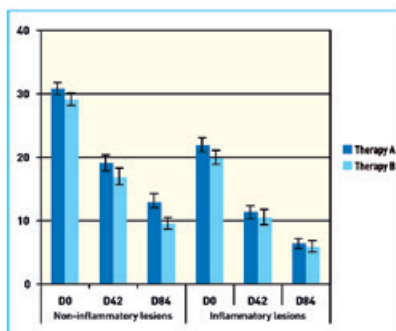
## MATERIAL AND METHODS

One hundred patients with mild or moderate acne localized on the face were divided at random into two therapy groups: 50 applied once a day BPO (each evening) and placebo (each morning) (A) and 50 applied every other day BPO (in the evening) and the new formulation once a day (each morning) (B). All the patients were observed at the time of enrolling and two more times (D42, D84). Side-effects and clinical-therapeutic effectiveness were noted.

	Therapy A	Therapy B	p
Size (n)	50	50	-
Age (years)	20 ± 4	20 ± 4	0.98
Gender (M/F)	20/30 (40/60%)	20/30 (40/60%)	-
Age of the acne (years)	5 (3-9)	6 (3-9)	0.92
Severity of acne (GEA scale) [1]:			
- Light (Grade 2)	14	22	0.23
- Medium (Grade 3)	34	25	
- Severe (Grade 4)	2	3	

## RESULTS

The quantity of BPO used during this study was on average 55 ± 4.8g for therapy A and 32 ± 3.8g for therapy B (p=0.0001) (the median weight is strictly twice more for therapy A than for therapy B). Both therapies showed a clinical improvement in the acneic lesions with moderate adverse effects.



A significant reduction in mean inflammatory (-70% for A and -73% for B therapy respectively) and non-inflammatory lesions (-59% and -68%) was noticed at D84 in comparison with baseline, with no significant difference between the 2 therapies (p=0.46 and p=0.57).

Local tolerability, global efficacy and compliance were good and no significant difference was noticed between the 2 therapies (p=0.98, p=0.52, p=0.91).

In both groups A and B, 13% of patients have a stationary condition whereas 88% (A) and 85% (B) have a reduction of severity of their acne of 1 grade (48% for both therapies); 2 grades (38 and 33%) or 3 grades (2 and 4% respectively). Global score for quality of life (QOL) evaluated via Cardiff Acne Disability Index (CADI) [2] was significantly smaller at D84 for therapy B than for therapy A (2.5 ± 0.3 and 4.1 ± 0.4 at D84, p=0.003 versus 5.0 ± 0.4 and 4.2 ± 0.4 respectively at D0). The evolution throughout the study is not significantly different between both groups. For 3 questions out of 5 concerning QOL, therapy B shows significantly smaller percentage of affected patients compared to therapy A at D84.

	Therapy A		Therapy B		p
	D0	D84	D0	D84	
1. As a result of having acne, during the last month have you been aggressive, frustrated or embarrassed?	24%	19%	14%	4%	0.04
2. Do you think that having acne during the last month interfered with your daily social life, social events or relationships with members of the opposite sex?	24%	17%	18%	4%	
3. During the last month have you avoided public changing facilities or wearing swimming costumes because of your acne?	6%	4%	8%	2%	0.03
4. How would you describe your feelings about the appearance of your skin over the last month?	38%	23%	30%	9%	
5. Please indicate how bad you think your acne is now.	54%	21%	38%	13%	0.05

## CONCLUSION

This study demonstrated that the new formulation containing LHA, Salicylic acid, Linoleic acid, Niacinamide and Piroctone Olamine allows the number of BPO applications to be reduced by 50%, without affecting the clinical efficacy on inflammatory and non-inflammatory lesions, the tolerability and the compliance and to increase the patients' QOL.

## REFERENCE

- Dreno B, Poli F, Pawin H, Beylot C, Faure M, Chivot M et al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. *J Eur Acad Dermatol Venerol* 2011; 25: 43-48.
- Motley RJ, Finlay AY. Practical use of disability index in the routine management of acne. *Clin Exp Dermatol* 1992; 17: 1-3.

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LABORATOIRE DERMATOLOGIQUE

# RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED STUDY OF A NEW FORMULATION USED AFTER 5% BENZOYL PEROXIDE IN THE TREATMENT OF FACIAL ACNE VULGARIS

B. DRENO<sup>1</sup>, A. KHAMMARI<sup>1</sup>, A. ROUGIER<sup>2</sup>, S. SEITE<sup>2</sup>

<sup>1</sup>Department of Dermato Oncology, Hôtel Dieu, CHU Nantes, France, <sup>2</sup>La Roche-Posay Dermatological Laboratories, Asnières, France.

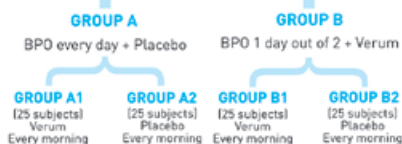
## INTRODUCTION

Benzoyl peroxide (BPO) is a highly lipophilic oxidizing agent with bactericidal and keratolytic effects. It is a gold standard for papular-pustular acne. However, acne lesions may relapse as quickly as 1 month after stopping the BPO therapy. So, it would be interesting to take over from BPO treatment in order to allow the maintenance of effect after treatment termination. The aim of this randomized double-blind placebo-controlled study was to evaluate a new formulation containing: Lipohydroxy acid (LHA), Salicylic acid (SA), Linoleic acid, Niacinamide and Piroctone Olamine in subjects with acne vulgaris stopping after a 3-month 5% BPO therapy.

## MATERIAL AND METHODS

One hundred patients with mild or moderate acne localized on the face were previously divided at random into two therapy groups: 50 applied BPO once a day (each evening) and placebo (each morning) [A] and 50 applied BPO every other day (in the evening) and the new formulation (or verum) once a day (each morning) [B]. At the end of the 3-month treatment, patients were randomized into 4 groups: 2 groups of 25 applied the tested formulation or verum (A1 and B1) and 2 groups of 25 applied placebo (A2 and B2) every morning for 84 days after the end of 2 different BPO therapies. All patients were observed at D84, D126 and D168.

### BPO therapy (3 months)



## RESULTS

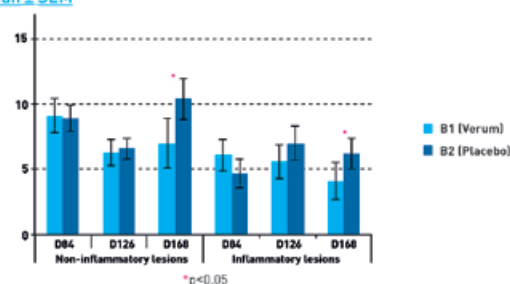
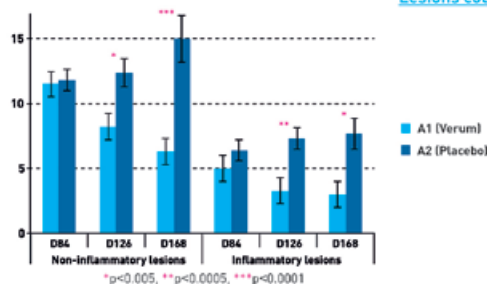
At the end of the BPO therapy (D84), all patients showed a clinical improvement in the acneic lesions with moderate side-effects.

### Breakdown of patients according to the severity of acne (GEA)

	A (Placebo) (n=50)	B (Verum) (n=50)	p
at D0:			
- Light (Grade 2)	14	22	
- Medium (Grade 3)	34	25	
- Severe (Grade 4)	2	3	0,23

	A1 (Verum) (n=22)	A2 (Placebo) (n=24)	B1 (Verum) (n=23)	B2 (Placebo) (n=24)	p
at D84:					
- Nearly no lesion (Grade 1)	16	11	15	16	
- Light (Grade 2)	5	13	6	6	
- Medium (Grade 3)	1	0	2	0	0,99

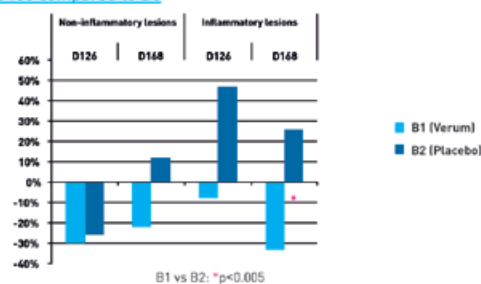
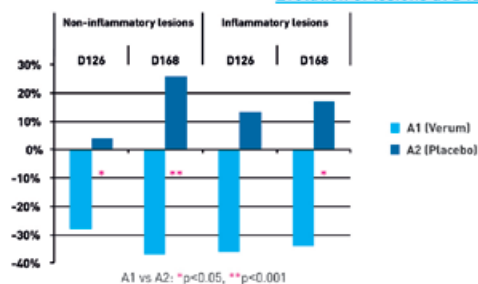
### Lesions count: Mean ± SEM



In the 2 groups treated with the tested formulation (A1 and B1), the total number of non-inflammatory and inflammatory lesions kept on declining despite the discontinuation of BPO therapies for up to 3 months after the end of treatment.

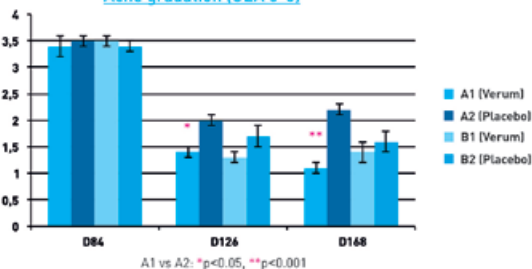
In the 2 groups treated with placebo (A2 and B2), a relapse was observed 1.5 months after stopping the BPO treatment (occurrence or recurrence of acne lesions). A significant difference between the placebo and the tested formulation was noticed at D168 in both cases.

### Evolution of lesions at D126 and D168 compared to D0



Local tolerance, global efficacy and compliance were good. The efficacy judged by the investigator is significantly better in group A1 (Verum) than in group A2 (Placebo), from 1.5 months after the BPO treatment stop.

### Acne gradation (GEA 0-5)



	A1		A2		
	D84	D168	D84	D168	
1. As a result of having acne, during the last month have you been depressed, frustrated or embarrassed?	48%	5%	48%	22%	p=0.04
2. Do you think that having acne during the last month interfered with your daily social life, social events or relationships with members of the opposite sex?	17%	10%	17%	17%	
3. During the last month have you avoided public changing facilities or wearing swimming costumes because of your acne?	8%	5%	8%	9%	
4. How would you describe your feelings about the appearance of your skin over the last month?	23%	5%	23%	30%	p=0.04
5. Please indicate how bad you think your acne is now	21%	5%	21%	35%	p=0.01

The global score for quality of life (QOL) evaluated via Cardiff Acne Disability Index (CADI) [2] was 2.4 ± 0.5 (A1) and 4.5 ± 0.7 (A2) (p=0.01) and 1.6 ± 0.3 (B1) and 2.8 ± 0.7 (B2) (p=0.21) at D168. For 3 questions out of 5 concerning QOL, therapy A2 showed significantly smaller percentage of affected patients compared to therapy A1 at D168.

## CONCLUSION

This study pointed up the interest of the new formulation containing LHA, Salicylic acid, Linoleic acid, Niacinamide and Piroctone Olamine following a BPO treatment. It allows delaying relapses, up to 3 months after the treatment stop, offering a good tolerance, compliance and increasing patients' QOL.

## REFERENCE

- Dreno B, Poli F, Pawin H, Beylot C, Faure M, Chivot M et al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. *J Eur Acad Dermatol Venerol* 2011; 25: 43-48.
- Mottley RJ, Finley AY. Practical use of a disability index in the routine management of acne. *Clin Exp Dermatol* 1992; 17: 1-3.

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## 5 EFFACLAR DUO(+) EFFICACY ON POST-INFLAMMATORY HYPERPIGMENTED LESIONS

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Post-inflammatory hyperpigmentation is a common sequelae following affliction by acne: it is psychologically disturbing for the patients and can affect the quality of life.

A randomized double-blind placebo-controlled bilateral trial has been conducted to evaluate the efficacy of Effaclar DUO(+) on acne patients presenting a high risk of post-inflammatory hyperpigmented lesions.

Additionally, an observational study was conducted on a larger scale and carried out by dermatologists in their private practice.

- Scientific poster European Academy of Dermatology and Venereology 2014:  
**A double-blind, randomized, placebo controlled clinical bilateral trial evaluating the efficacy and safety of a new formulation in acneic patients with risks of PIH lesions.**
- Scientific poster European Academy of Dermatology and Venereology 2017:  
**Observational study on patients with acne and at risk of PIH.**



# A DOUBLE-BLIND, RANDOMIZED, PLACEBO CONTROLLED CLINICAL BILATERAL TRIAL EVALUATING THE EFFICACY AND SAFETY OF A NEW FORMULATION IN ACNEIC PATIENTS WITH RISKS OF POST-INFLAMMATORY HYPERPIGMENTED LESIONS

X. WANG<sup>1,2</sup>, L. ZHAOXIA<sup>2</sup>, Z. DAN<sup>2</sup>, L. LI<sup>1,2</sup>, S. SEITE<sup>1</sup>

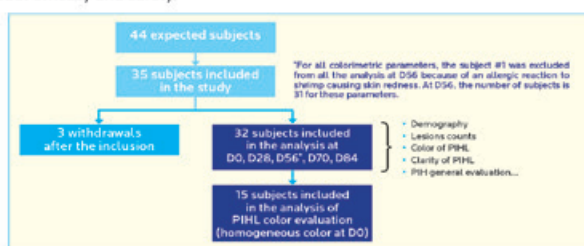
<sup>1</sup>Department of Dermatology, West China Hospital, Sichuan University, Chengdu, China - <sup>2</sup>Sichuan Province Cosmetics Engineering Technology Research Centre, Chengdu, China - <sup>3</sup>La Roche-Posay Pharmaceutical Laboratories, Asnières, France

## INTRODUCTION

Post-inflammatory hyperpigmentation (PIH) is an acquired, reactive hypermelanosis that is a sequelae of many cutaneous disorders with an inflammatory component including acne and particularly in high phototype and Asians. The objective of this study is to demonstrate the interest of a dermocosmetic formula containing anti-inflammatory ingredients in the prevention of the appearance of post-inflammatory hyperpigmented lesions in patients with mild to moderate acne.

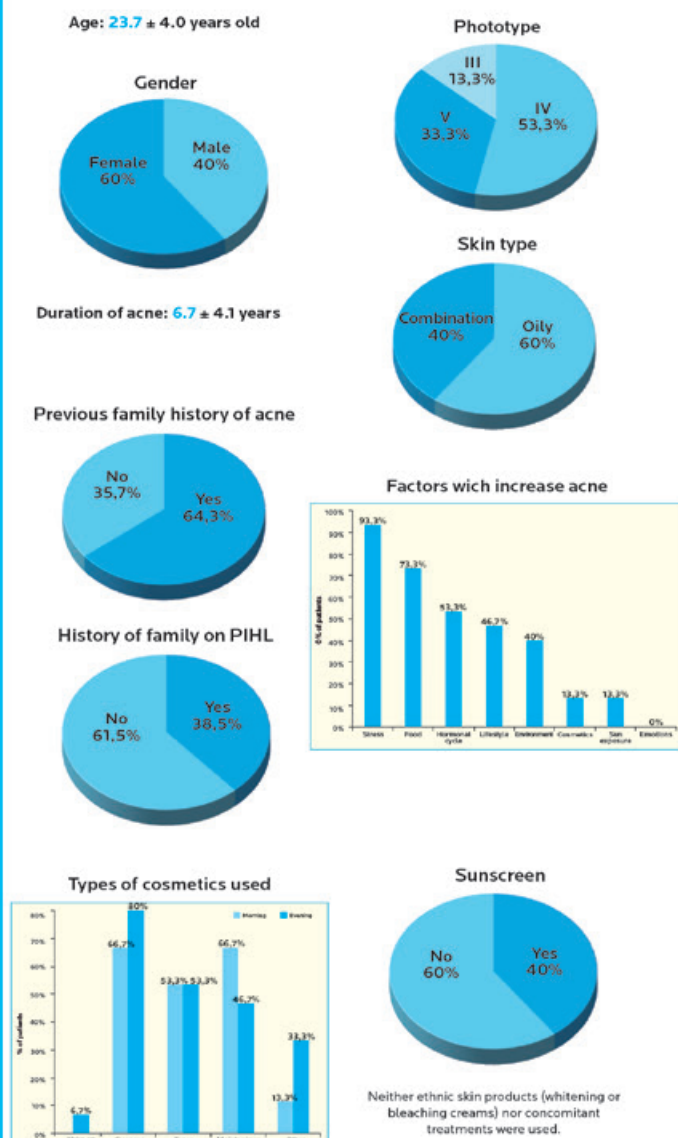
## METHODS

This single centre, double-blind, randomized, placebo controlled, bilateral (split-face) comparison was conducted during the winter season, on 35 Chinese acneic subjects with post-inflammatory hyperpigmented lesions of uniform color on both hemi-faces. The test formula was applied in the investigator center twice a day, for 56 days on one side of the face and a placebo formula on the other side of the face. Assessments included evaluation of the number and evolution of color of post-inflammatory hyperpigmented lesions (PIHL); acne grade (GEA) and lesion count both cross-polarized light and standard photography, together with clinical evaluations of global efficacy and safety.

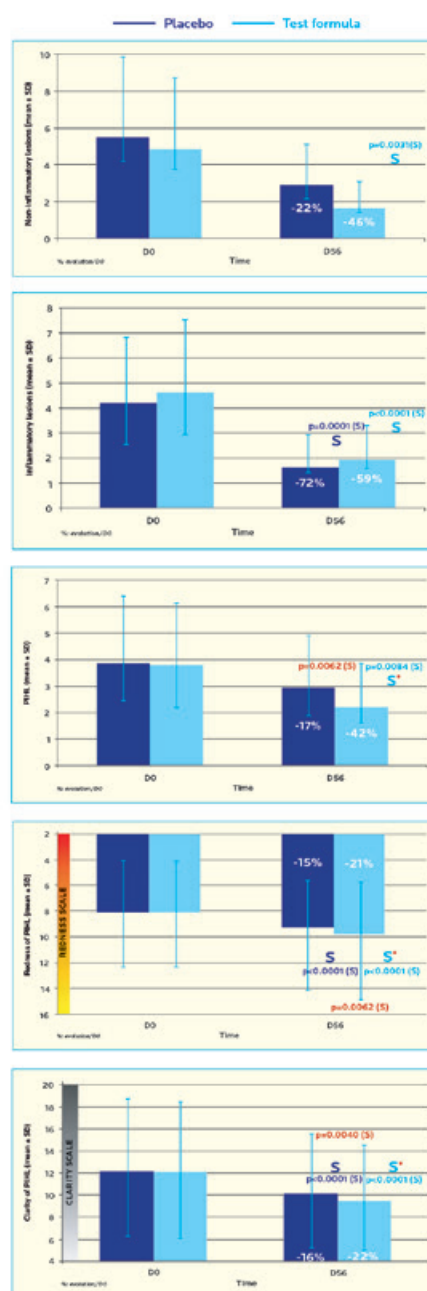


## RESULTS

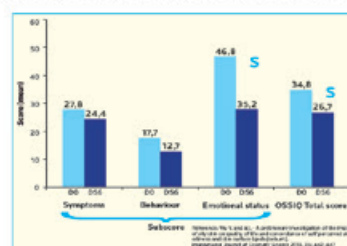
Patients characteristics:



At day 56, we noticed a significant reduction in inflammatory and non-inflammatory lesions associated with a significant difference between both treatments on the amelioration in the number and color (redness and clarity) of PIHL (clinical evaluation).



These results were supported by instrumental analysis (spectrophotometer evaluations of parameters L\* (lightness) and a\* (Red/Green value)). Furthermore, at day 56 we noticed a significant improvement of the quality of life and self-image of patients using the OSSIQ (Oily Skin Self-Image) questionnaires (18 items).



## CONCLUSION

This study demonstrated that the new formulation containing Lipohydroxy acid (LHA), Salicylic acid (SA), Linoleic acid, Niacinamide, Piroctone-olamine and Procerad (with an anti-inflammatory and anti-melanin synthesis action) allows to manage acneic patients with risks of post-inflammatory hyperpigmented lesions.

LA ROCHE-POSAY  
LABORATOIRE DERMATOLOGIQUE

# OBSERVATIONAL STUDY ON PATIENTS WITH ACNE AND AT

S. SEITE,

La Roche-Posay Dermatological

## INTRODUCTION

Acne is one of the major reasons for dermatological consultation. Post-inflammatory hyperpigmentation (PIH) is sometimes associated with inflammatory lesions. The aim of this observational study was to evaluate the use of a topical formula containing ingredients (niacinamide, procerad, LHA, piroctone olamine, linoleic acid) to reduce acne lesions and PIH, alone or in adjunctive therapy, in patients with mild to moderate acne and post-inflammatory hyperpigmented lesions.

## METHODS

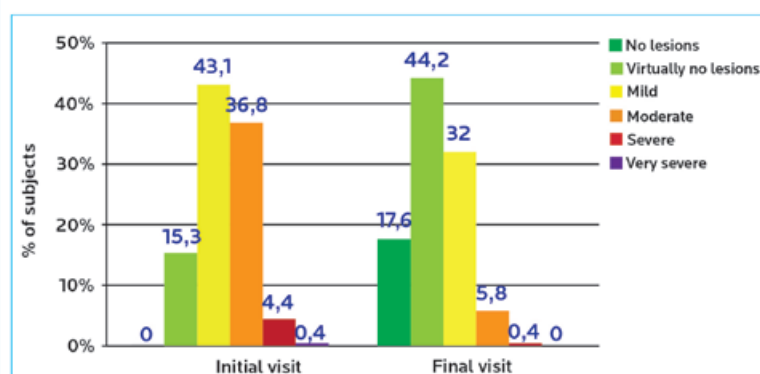
This survey included 5232 patients (68.2% female, 31.8% male; mean age  $22.9 \pm 7$  years old) with mild (47.9%) to moderate (47.4%) acne and was conducted by private practice dermatologists. Phototypes of patients were distributed as 6.7% phototype I, 47.5% phototype II, 38.9% phototype III, and 6.5% phototype IV. 75.8% of patients showed residual colored marks on the face. At baseline, the dermatologists completed a questionnaire concerning the patient profile, an evaluation of clinical acne severity (GEA) and noted the treatment regimen prescribed. At the second visit, planned 2 months later, dermatologists re-evaluated the acne severity, overall tolerance, reduction of seborrhea and residual colored marks.

## RESULTS

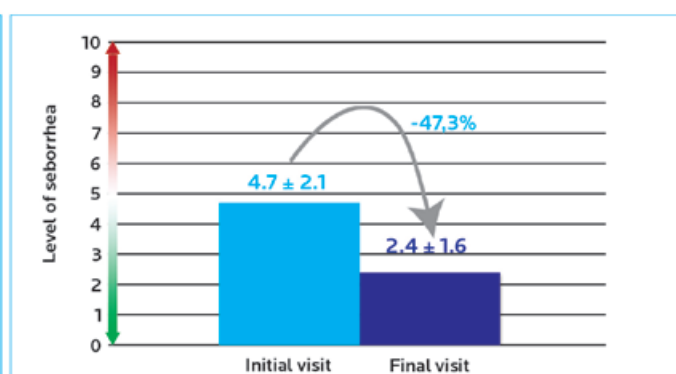
The topical skin care product was applied twice a day for 53% of patients, in the morning for 31.7% and in the evening for 15.3%. Some patients used the topical skin care product alone (35.6% of patients) and others used with the same product in adjunctive therapy (64.4% of patients).

### SKIN CARE PRODUCT IN MONOTHERAPY

Severity of acne (GEA)



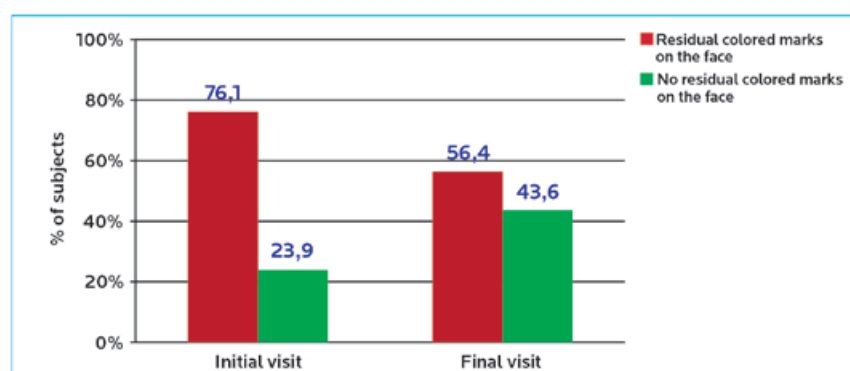
Seborrhea evolution



80.1% of patients presented an improvement of their acne showing a significant effect ( $p < 0.0001$ ) of the skin care product after 2 months.

A significant ( $p < 0.0001$ ) decrease (-47.3% on average) of seborrhea was observed after 2 months with improvement in 88.4% of patients.

Residual colored marks on the face



There was a significant decrease ( $p < 0.0001$ ) of the number of patients presenting marks at the end of the study.

# RISK OF POST-INFLAMMATORY HYPERPIGMENTED LESIONS

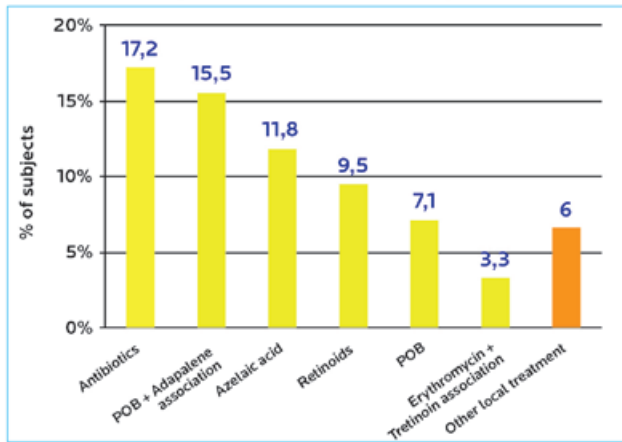
D. MOYAL

Laboratories, Asnières, France

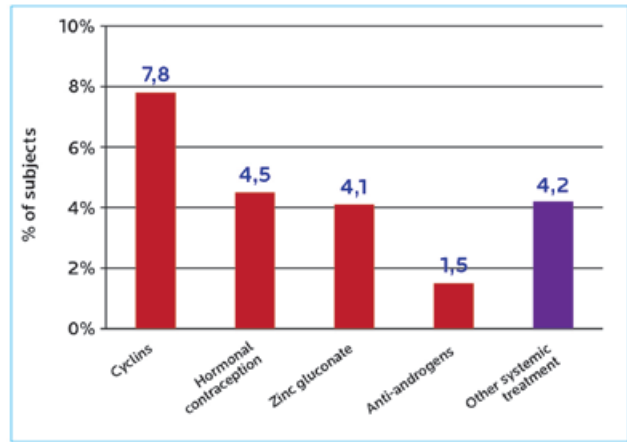
## SKIN CARE PRODUCT IN ADJUNCTIVE THERAPY

59.4% of the patients had a local treatment and 19.9% a systemic treatment.

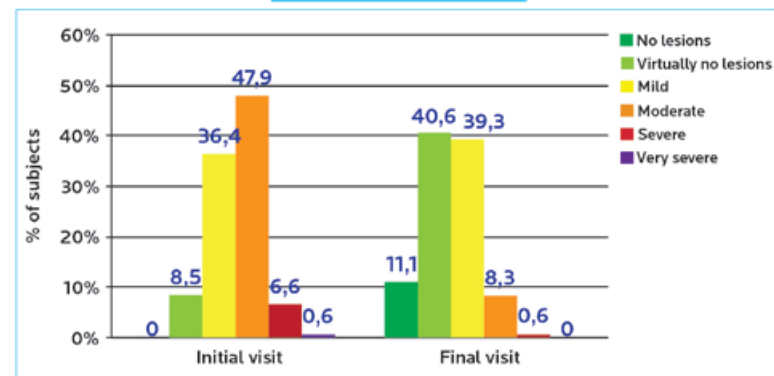
Type of local treatments



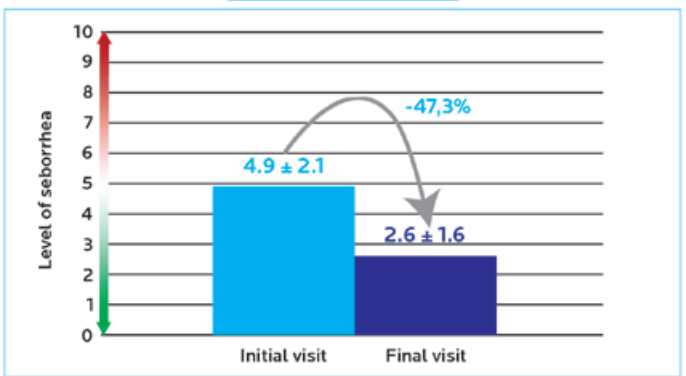
Type of systemic treatments



Severity of acne (GEA)



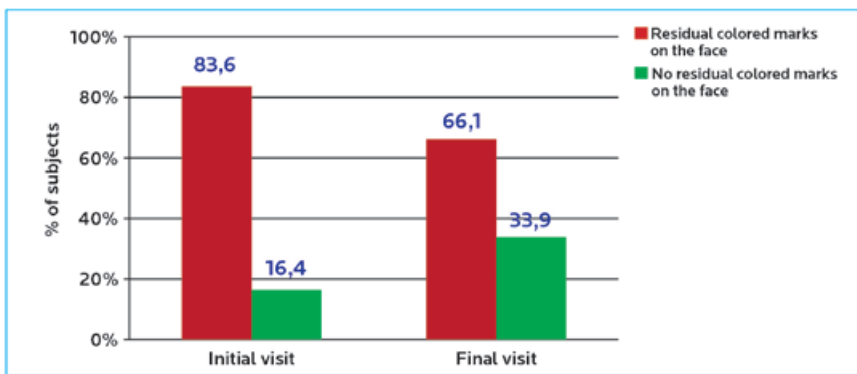
Seborrhea evolution



83% of patients presented an improvement of their acne showing a significant effect ( $p<0.0001$ ) of the treatment associated with the skin care product after 2 months.

A significant ( $p<0.0001$ ) decrease (-47.3% on average) of seborrhea was observed after 2 months with improvement in 91.6% of patients.

Residual colored marks on the face



There was a significant decrease ( $p<0.0001$ ) of the number of patients presenting marks at the end of the study.

The skin care product tolerance was evaluated by the dermatologists as high to excellent for 91.2% of the patients. 91.1% of the patients were satisfied to very satisfied by the product.

## CONCLUSION

This survey demonstrated that a dermocosmetic product containing lipohydroxy acid, salicylic acid, linoleic acid, niacinamide, piroctone olamine and procerad (anti-inflammatory and anti-melanin synthesis action) can provide good results in managing acne patients with risks of post-inflammatory hyperpigmented lesions, when associated with therapeutic treatments or alone for milder acne.







# 6 IS AIR POLLUTION WORSENING ACNE?

To answer this question, 2 studies have been conducted:

- One large epidemiological study in a dermatology hospital with 59530 patients over a 2-year period
- One clinical study on 64 acne patients, living in a polluted environment. Demonstration of the efficacy of a 3-step routine on acne lesions after 4 weeks of use.

These studies indicate that exposure to air pollutants may aggravate acne vulgaris

- **Pollution and acne: is there a link?**

Krutmann J, Moyal D, Liu W, Kandahari S, Lee GS, Nopadon N, Xiang LF, Seité S.  
Clin Cosmet Investig Dermatol. 2017 May 19;10;199-204  
PMID: 28579815

- **A time-series study of the effect of air pollution on outpatient visits for acne vulgaris in Beijing**

J Krutmann, W Xuying, G Qun, W Qiaowei, XC Pan, L Wei, A Vierkötter, S Seité, D Moyal, T Schikowski, Journal of Dermatological Science 2018 , 31; 107-113  
PMID:29408821

- Scientific poster European Academy of Dermatology and Venereology 2017:  
**Effects of air pollution on sebum rate and acne: how to manage acneic skin in a polluted environment.**

# EFFECT OF AIR POLLUTION ON SEBUM RATE AND ACNE:

D. MOYAL,

La Roche-Posay Dermatological

## INTRODUCTION

Pollution is a major concern in big cities. Moreover, epidemiological and mechanistic studies suggest that air pollution can also have a negative impact on the integrity of the skin. Indeed, it can result in aggravating skin sensitivity and reactivity. It has been determined that particulate matters can generate reactive oxygen species, leading to lipid and protein oxidation that can induce up-regulation of pro-inflammatory mediators. A harmful synergy between UV (particularly UVA) radiation and pollution was also observed. The objective of this study was to evaluate first the effect of pollution on sebum rate and acne lesions and then, the efficiency of a skin care product routine to reduce the effects of pollution.

## METHODS

In the first part of the study, 64 Chinese women and men presenting acne were recruited. Sebum rate and acne lesions numbers were evaluated each week during 8 weeks in a polluted environment (Beijing, China). All subjects used the same mild cleanser and skin care to avoid variability due to different products usage. In the second part of the study, 43 of these subjects used 3 products (a purifying foaming gel, a skin care dedicated to acneic patients, a daily sun care with high UVB and UVA protection level) during 4 weeks to assess the efficacy of this routine to reduce the sebum rate and acne severity in polluted environment. Daily rate of air pollutants was collected from the official Beijing air pollution website.

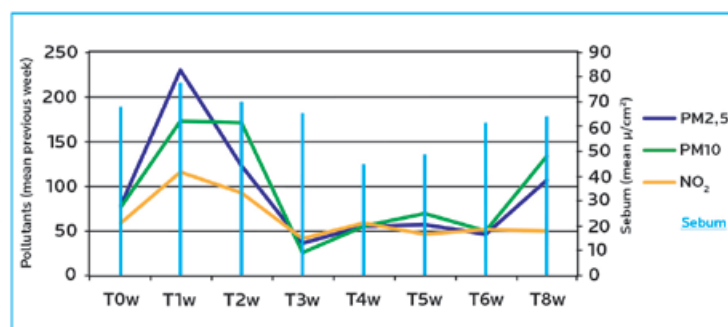
## RESULTS

64 patients were included in this study. Among them we had 16% of male and 84% of female with mean age 25.9 years (from 18 to 42 years old).

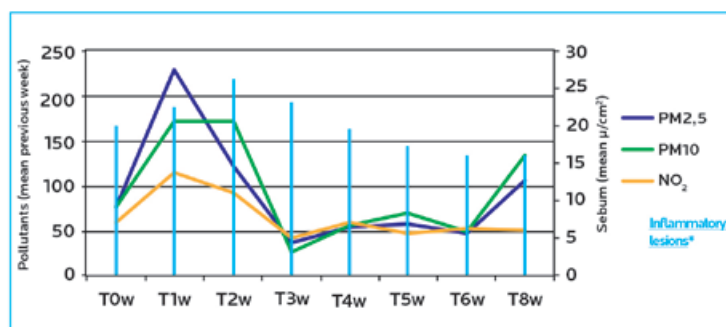
### - LINK BETWEEN ACNE AND POLLUTION -

We demonstrated a significant relationship (Variance analysis, Shapiro-Wilk test  $p < 0.0001$ ) between air pollutants, sebum rate and acne lesions. The higher the concentration of PM<sub>2.5</sub>, PM<sub>10</sub> and NO<sub>2</sub> was, the higher the sebum rate and the number of inflammatory and retentional lesions were. The best relationship was found between these parameters and the level of pollutants of the previous week.

Relationship between sebum and air pollutants

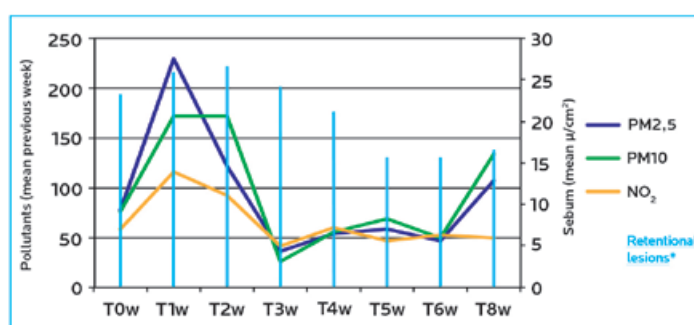


Relationship between inflammatory lesions and air pollutants



\*Inflammatory lesions = papules and pustules

Relationship between retentional lesions and air pollutants



\*Retentional lesions = open and closed comedones

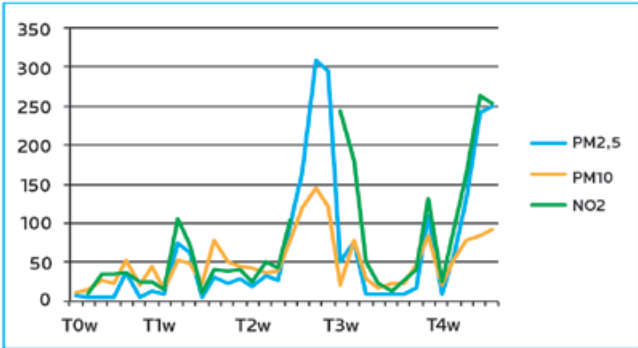
# HOW TO MANAGE ACNEIC SKIN IN A POLLUTED ENVIRONMENT

S. SEITE

Laboratoires, Asnières, France

## - EFFECT OF SKIN CARE PRODUCTS ON ACNE AND SEBUM IN POLLUTED ENVIRONMENT -

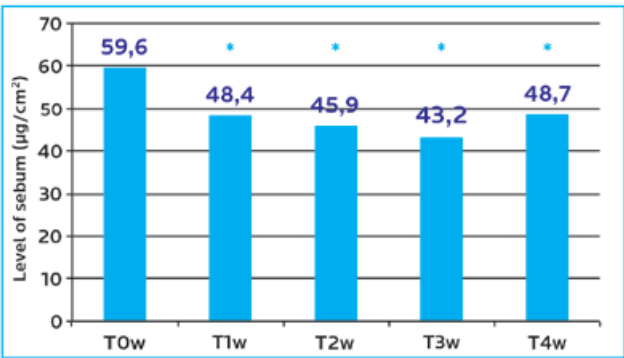
Pollution during the skin care products evaluation



PM2.5, PM10 and NO<sub>2</sub> levels exceeded the OMS guidelines (PM2.5 25µg/m<sup>3</sup> 24-hour mean, PM10 50µg/m<sup>3</sup> 24-hour mean, NO<sub>2</sub> 40µg/m<sup>3</sup> annual mean).

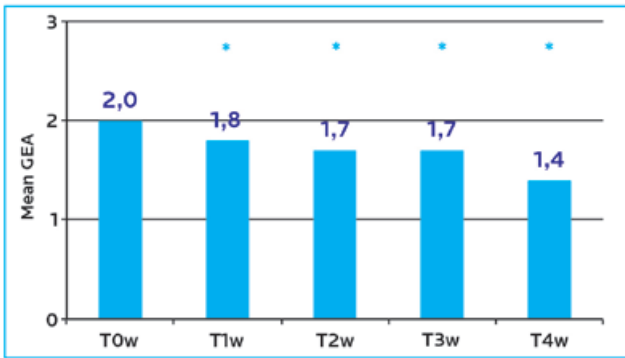
The skin care product routine significantly reduced the sebum rate (-20% in average), the acne severity (-28% at T4w), the number of inflammatory lesions (-34% at T4w) and the number of retentional lesions (-17% at T4w).

Skincare products effect on sebum



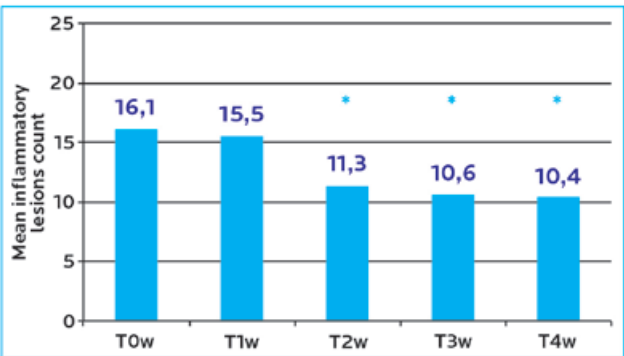
\*p<0.05 compared to T0w

Skincare products effect on the acne severity



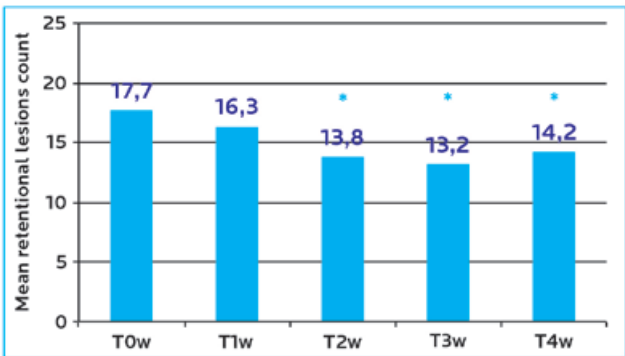
\*p<0.05 compared to T0w  
GEA 1: virtually no lesion; GEA 2: mild acne

Skincare products effect on the inflammatory lesions



\*p<0.05 compared to T0w

Skincare products effect on the retentional lesions



\*p<0.05 compared to T0w

## CONCLUSION

This study indicates that pollution may aggravate acne vulgaris and demonstrates in a polluted environment the interest of using adapted products to reduce sebum rate and acne severity.

## REFERENCE

Krutmann J, Moyal D, Liu W, Kandahari S, Lee GS, Nopadon N, Xiang LF, Selte S. Pollution and acne: is there a link? *Cosmet Invest Dermatol*: 2017, May 19: 10: 199-204







# 7 ACNE AND SKIN MICROBIOTA

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LA ROCHE-POSAY has been leader in skin microbiota research since 2011, thus allowing to provide new insights into the microbial mechanisms behind acne development.

New studies have demonstrated that *Propionibacterium Acnes* (or *Cutibacterium Acnes*) is not the only bacterial actor in acne but that *Staphylococci* are also involved. This suggests that treatments strategies should modulate the skin microbiota and maintain bacterial balance.

In this context, EFFACLAR DUO(+) demonstrated its efficacy in rebalancing skin microbiota in acne patients.

- **Skin microbiome and acne vulgaris: staphylococcus, a new actor in acne.**

Dreno B, Martin R, Moyal D, Henley JB, Khammari A, Seité S.

Exp Dermatol. 2017 Sept ; 26(9) :798-803

PMID: 28094874

- Scientific poster European Academy of Dermatology and Venereology 2016:  
**Skin microbiome and acne vulgaris: *staphylococcus*, a new actor in acne.**



# SKIN MICROBIOME AND ACNE VULGARIS:

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## INTRODUCTION

Acne is a chronic inflammatory disease targeting the pilosebaceous follicle. *Propionibacterium acnes* (*P. acnes*), the sebaceous gland and follicular keratinocytes play a role in the development of acne. Together they induce inflammation in the follicle by activating the innate immunity. For several years, the role of *Staphylococcus*, another bacterium genus, has been discussed in the development of acne. However, to date its role has never been demonstrated. The objective of this study was to investigate the characteristics of the microbiome on unaffected skin and acne lesions (comedone and papulo-pustular lesions) and to determine changes after applying either erythromycin 4% or a dermocosmetic containing lipohydroxy acid, salicylic acid, linoleic acid, niacinamide, piroctone-olamine, a ceramide and Thermal Spring Water for 28 days.

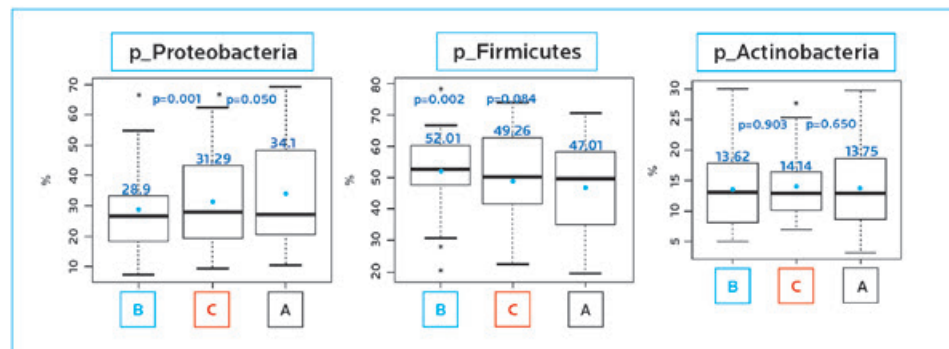
## METHODS

This single-centre controlled, randomized, double blinded, intra-individual study was conducted in 55 subjects with mild to moderate acne (GEA Grading)<sup>(1)</sup> before and after treatment either with a dermocosmetic formulation or a topical antibiotic. Microbiota were collected with swabs at D0 and D28, under axenic conditions from 3 sites (comedones, papulo-pustular lesions and unaffected or clinically healthy looking skin) and characterised using a high-throughput sequencing approach that targets a portion of the 16S rRNA bacterial gene<sup>(2)</sup>.

## RESULTS

An overabundance of Proteobacteria and Firmicutes and an underrepresentation of Actinobacteria on the skin surface of subjects with acne were observed. Moreover, Proteobacteria were less abundant in areas with comedones and papulo-pustular lesions than in unaffected skin areas (29% vs 34% -  $p=0.001$  and 31% vs 34% -  $p=0.05$ ) while Firmicutes were more abundant in zones with comedones (52% vs 47% -  $p=0.002$ ). No difference for Actinobacteria was evidenced.

Main bacterial Phyla on the skin surface of the 3 sampled areas (comedones (B), papulo-pustules (C) and healthy skin (A)) at D0 (n=26)



*Staphylococci* were more abundant on the surface of comedones and papulo-pustular lesions ( $p=0.004$  and  $p=0.003$  respectively) compared to unaffected skin. *Propionibacteria* represented less than 2% of the bacteria characterised.

Main bacterial phyla and genus in percentage at the skin surface of the 3 sampled areas (comedones, papulo-pustular and unaffected skin) at D0 (n=26)

		Area		
PHYLUM	GENUS	Comedones (%)	Papulo-pustular (%)	Unaffected skin (%)
Actinobacteria		13,61	14,15	13,75
	<i>Propionibacterium</i>	1,04	1,20	1,36
	<i>Corynebacterium</i>	7,93	8,54	7,71
	Other Actinobacteria	4,64	4,40	4,69
Firmicutes		52,01*	49,27	47,01
	<i>Staphylococcus</i>	33,87*	34*	26,85
	Other Firmicutes	18,14	15,27	20,16
Proteobacteria		28,90*	31,30*	34,10
Bacteroidetes		4,16	3,78	3,73
Fusobacteria		0,73	0,84	0,64
Other		0,58	0,67	0,76

\* $p<0.05$  versus unaffected skin

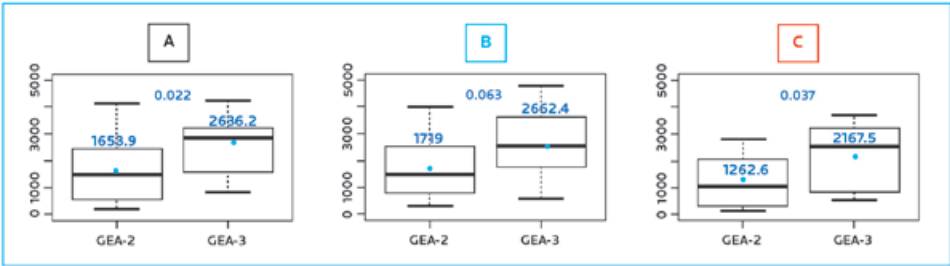
# STAPHYLOCOCCUS, A NEW ACTOR IN ACNE

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In all 3 sampled areas, *Staphylococci* proportions increased with the acne severity ( $p<0.05$  between GEA-2 and GEA-3).

*Staphylococcus* genus at the skin surface of 3 sampled areas (comedones (B), papulo-pustules (C) and healthy skin (A)) in GEA-2 (n=16) and GEA-3 (n=10) at D0



After one month of treatment, erythromycin was mainly effective on Actinobacteria while the dermocosmetic was effective on both Actinobacteria and *Staphylococcus*.

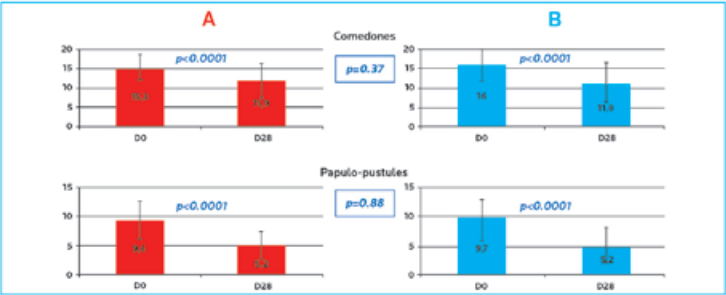
Main bacterial phyla and genus in percentage at the skin surface of the 3 sampled areas (comedones, papulo-pustular and unaffected skin) for the hemi-face receiving Erythromycin 4% or the dermocosmetic after (Day 28) treatment (n=26)

		Day 28 - Erythromycin			Day 28 - Dermocosmetic		
PHYLUM	GENUS	Comedones (%)	Papulo-pustular (%)	Unaffected zone (%)	Comedones (%)	Papulo-pustular (%)	Unaffected zone (%)
Actinobacteria		11,89*	11,09	11,98	11,56	10,87*	11,25
	<i>Propionibacterium</i>	0,82**	0,82	1,22	0,64	0,76	1,06
	<i>Corynebacterium</i>	5,87*	5,72	5,88	7,37	5,27*	4,95**
	Other					4,84	
	Actinobacteria	5,20	4,56	4,89	3,56		5,25
Firmicutes		49,43	43,79	45,80	44,55	47,11	46,40
	<i>Staphylococcus</i>	27,04	24,53**	24,91	19,96*	26,24**	23,52
	Other Firmicutes	22,39	19,30	20,91	24,60	20,89	22,92
Proteobacteria		30,54	36,32	37,15	35,60	33,19	33,95
Bacteroidetes		5,21	4,87	3,61	5,11	5,52	5,32
Fusobacteria		0,62	0,49	0,38	0,65	0,81	0,51
Other		2,27*	3,28*	1,01	2,48**	2,45	2,41**

\* $p<0.05$  versus Day 0, \*\* $p<0.1$  versus Day 0

In addition, a significant reduction of both comedones and papulo-pustular lesions with no significant difference between the products was observed.

Reduction of the number of papulo-pustular lesions and comedones on both hemi-faces after 28 days of treatment with either erythromycin (A) or the dermocosmetic (B) (n=26, values are expressed in mean±SD)



## CONCLUSION

The study showed that in subjects with acne, the bacterial diversity is similar on the surface of unaffected skin as well as on comedones and papulo-pustular lesions. Before and after treatment with either a topical antibiotic or a dermocosmetic, *Staphylococci* remained the predominant genus of the superficial skin microbiota of acne lesions as well as of the unaffected skin.

## REFERENCES

1. Dreno B, Poli F, Pawin H, et al. Development and evaluation of a Global Acne Severity Scale (GEA Scale) suitable for France and Europe. *J Eur Acad Dermatol Venereol*. 2011; **25**: 43-48  
2. Caporaso JG, Lauber CL, Walters WA et al. Global patterns of 16S rRNA diversity at a depth of millions of sequences per sample. *Proc Natl Acad Sci USA*, 2011; **108** Suppl 1: 4516-4522



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