

# Hydrogen peroxide topical application for acne vulgaris treatment

---

Katarzyna Równy

Scientific Expert

Dr Irena Eris

---

CENTRE FOR SCIENCE AND RESEARCH

# AIM OF THE STUDY

subject  
of the study

2 innovative **dermocosmetic formulations**

active  
ingredients

**2%** hydrogen peroxide point-gel  
**1%** hydrogen peroxide face cream

testing

- safety
- anti-inflammatory
- anti-bacterial
- soothing effect

# INTRODUCTION

## Hydrogen peroxide

Chemical compound used as an oxidizer, bleaching agent and antiseptic.

Shows broad-spectrum efficacy against viruses, bacteria, yeasts, and bacterial spores.

Mechanism of action of  $\text{H}_2\text{O}_2$  in acne is similar to that of benzoyl peroxide.

# INTRODUCTION

## Hydrogen peroxide

- increased activity of sebaceous glands with sebum overproduction
- hyperkeratosis of pilosebaceous duct and comedo formation
- colonization of sebaceous glands ducts with anaerobic bacteria (*P. acnes*/*C. acnes*)
- induction of inflammatory processes in the skin

# INTRODUCTION

## Hydrogen peroxide

- increased activity of sebaceous glands with sebum overproduction
- hyperkeratosis of pilosebaceous duct and comedo formation
- **colonization of sebaceous glands ducts with anaerobic bacteria (*P. acnes*/*C. acnes*)**
- induction of inflammatory processes in the skin

# INTRODUCTION

## Hydrogen peroxide

Chemical compound used as an oxidizer, bleaching agent and antiseptic.

Shows broad-spectrum efficacy against viruses, bacteria, yeasts, and bacterial spores.

Mechanism of action of  $H_2O_2$  in acne is similar to that of benzoyl peroxide.

reduction of *Propionibacterium acnes* colonization

Good tolerability of 1%  $H_2O_2$  – high adherence.

Unstable, stabilization in cosmetic formulation required careful selection of ingredients and packaging.

# MATERIALS & METHODS

2% H<sub>2</sub>O<sub>2</sub>  
point gel

## CLINICAL TRIAL

**22 patients** (16-50 y. o.) mild to moderate AV, oily skin, papules and pustules

7 days, 3-4x a day for 2 days, later 2x a day, topically on the lesions

## dermatological assessment

- 10 point analogue scale

**instrumental analysis** after 24h, 48h, 3 days and 7 days use

VISIA® Complexion Analysis System (Canfield)

- spots, skin texture, visibility of pores, porphyrins

**Patients' assessment**

**1% H<sub>2</sub>O<sub>2</sub>  
face cream**

# MATERIALS & METHODS

## CLINICAL TRIAL

**15 patients** (16-61 y. o.) mild to moderate AV, oily skin, papules and pustules

7 days, 1x a day at night

## dermatological assessment

- 10 point analogue scale

## instrumental analysis

VISIA® Complexion Analysis System

- spots, skin texture, visibility of pores

Sebum levels, melanin, erythema, skin smoothnes (MPA Courage-Khazaka)

## patients' assessment



# RESULTS

## clinical assessment

10-point analogue scale (10-very big, 1-very small)

Cream 1% of H2O2				Point-gel 2% of H2O2			
Symptoms	D0	D7	% of change	Symptoms	D0	D7	% of change
Seborrhea severity	3,15	2,15	-31,7%	Number of papules	4,8	2,6	-45,8%
Number of pustules	1,23	0,46	-62,6%	Number of pustules	3,9	1,1	<b>-72%</b> (p=0.002)
visibility of acne lesions	3,69	3,08	-16,5%	visibility of acne lesions	5	3,07	<b>-40%</b> (p=0.0003)

# RESULTS

clinical  
assessment

Effects after 7 days of use	Cream 1% of H2O2		Point-gel 2% of H2O2	
	dermatologist evaluation	patients self-evaluation	dermatologist evaluation	patients self-evaluation
Fights againts existing acne lesions	54%	69%	95%	86%
Prevents from developing new acne lesions	31%	54%	23%	55%
Helps to regenerate skin faster	31%	54%	91%	77%
Heals the skin	46%	54%	91%	86%
Smoothes the skin	38%	38%	77%	77%

# RESULTS

8 y. o. subject after 4 days of 2% H<sub>2</sub>O<sub>2</sub> gel

instrumental



# RESULTS

instrumental

VISIA skin analysis

N=12	Cream 1% of H2O2	Point-gel 2% of H2O2
<b>Measured features</b>	<b>D4</b> (decrease in symptoms in %)	<b>D2</b> (decrease in symptoms in %)
Spots	-9%	-9%
Skin texture	-22%	-8%
Pores	-16%	-
Porphyrins	-18%	-19%

# RESULTS

-52% of porphyrins after 4 days of 1% H<sub>2</sub>O<sub>2</sub> cream

instrumental



# CONCLUSIONS

Both formulations were **well tolerated** by patients with moderate to severe acne.

No skin side effects (including pruritus, skin redness or dryness) were observed.

Both trials showed **reduction of acne-related symptoms** and accelerated **healing** of the lesions within 7 days.

Hydrogen peroxide in 1% or 2% concentrations can **supplement pharmacological treatment** of mild to moderate acne vulgaris.

# Thank you!

Katarzyna Równy

Scientific Expert

Dr Irena Eris

---

CENTRE FOR SCIENCE AND RESEARCH