

**Outreach note of the study report 20E5078 SUBLIO**

According to the study plan D20-823-1

**Assessment of the efficacy of a product on the improvement of a psoriatic skin on human skin explants *ex vivo***

- Tested products
- **City water (Longjumeau)**
  - **City water (Longjumeau) hyperionised with the Sublio Ionic WaterBox *Pro* system**

Sponsor **SUBLIO France**  
M. Frédéric Esnault  
8 rue René Coty  
85018 La Roche-sur-Yon Cedex  
frederic@sublio.com

Test facility **BIO-EC**  
1, Chemin de Saulxier  
91160 Longjumeau  
FRANCE  
Tél : +33 (0)1 69 41 42 21  
Email : info@bio-ec.fr  
www.bio-ec.fr

## CONTENTS

CONTENTS .....	2
STUDY .....	2
TESTED PRODUCTS .....	2
MATERIALS & METHODS .....	3
RESULTS.....	3
1. Epidermis thickness.....	3
2. Cytokeratin 16 .....	4
3. Psoriasin .....	4
CONCLUSION .....	5

## STUDY

This study was subject to a complete and detailed report under the reference 20E5078, returned to SUBLIO France, only owner of these results.

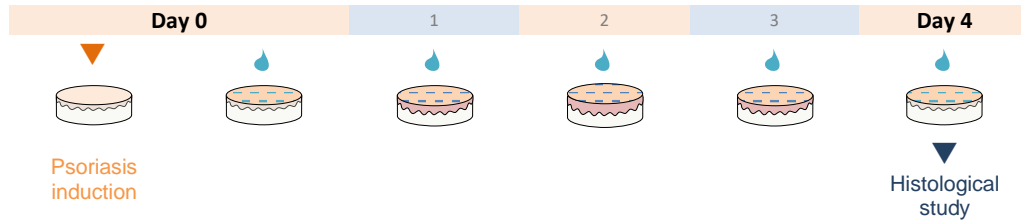
Date of the <b>beginning of the study</b>	2 <sup>nd</sup> April 2021
Date of the <b>end of the technical phase of the study</b>	24 <sup>th</sup> May 2021

## TESTED PRODUCTS

- P1 Water (Longjumeau city), sterilised by filtration at 0,22µm.
- P2 Water (Longjumeau city), sterilised by filtration at 0,22µm and hyperionised thanks to the **Sublio Ionic WaterBox Pro** device supplied by the SUBLIO France company.

## MATERIALS & METHODS

The aim of the study is to induce a psoriatic skin state on human skin explants kept in survival and to apply water (hyperionised or not) daily for 4 days. Then, a histological study was conducted to highlight the treatments activity.



The induction of the psoriatic state was performed by removal of the superior layers of the *stratum corneum* and the application of a pharmacologically active substance (Imiquimod, 2 mg/cm<sup>2</sup>).

Three conditions of treatment were performed: no treatment (blank), a treatment with Longjumeau water (2µL/cm<sup>2</sup>) and a treatment with Longjumeau water hyperionised with Sublio Ionic WaterBox *Pro* device (2µL/cm<sup>2</sup>).

These treatments are repeated every day for 4 days.

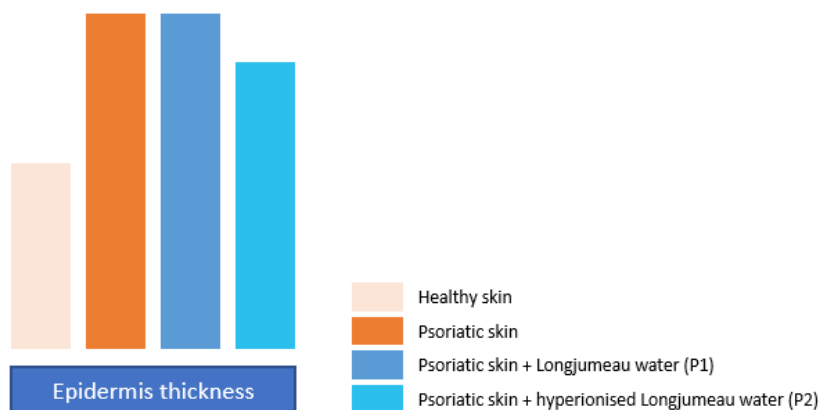
A histological study is then conducted to highlight the three characteristic parameters of a psoriatic state:

- An increase of the epidermis thickness reflecting a keratinocytes hyperproliferation and an inflammatory environment.
- An overexpression of cytokeratin 16 linked to cell proliferation.
- An overexpression of psoriasin linked to an alteration of the skin barrier function.

## RESULTS

### 1. Epidermis thickness

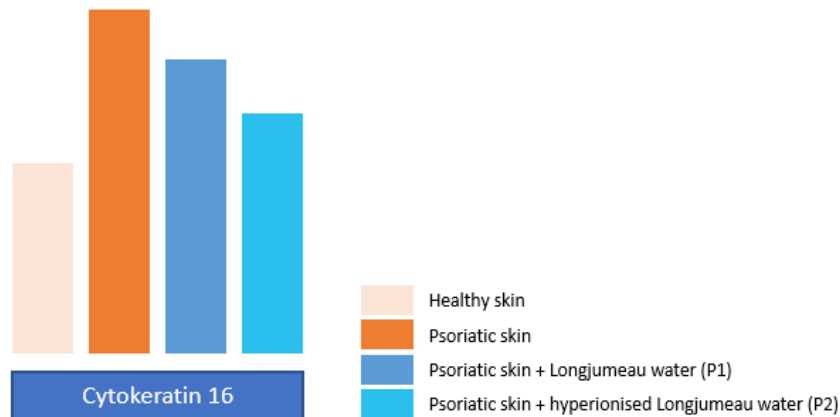
The induction of the psoriatic state leads to a significant increase of the epidermis thickness of 71%.



- The treatment **P1** (Longjumeau water) induces no significant modification of the epidermis thickness.
- The treatment **P2** (hyperionised Longjumeau water) induces a significant decrease of 13% of the epidermis thickness.

## 2. Cytokeratin 16

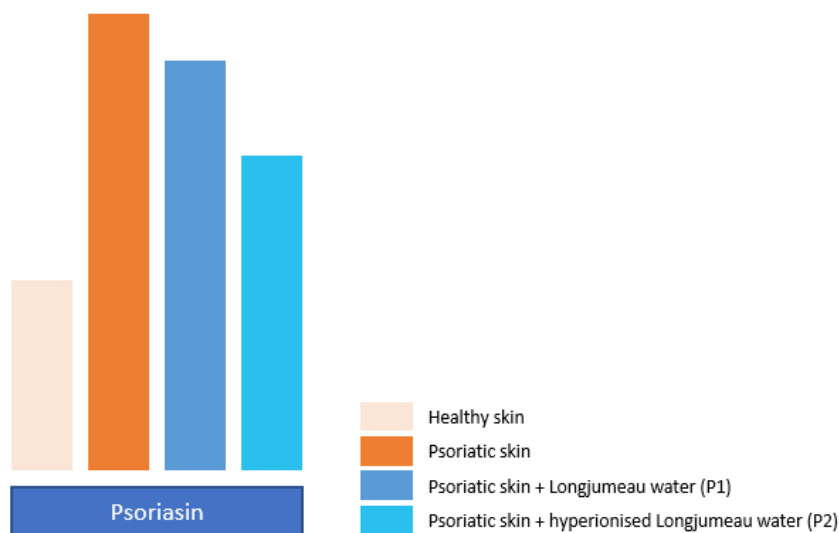
The induction of the psoriatic state leads to a very clear increase of cytokeratin 16 expression in the epidermis.



- ↳ The treatment **P1** (Longjumeau water) induces a slight decrease of cytokeratin 16, linked to a hyperproliferative state.
- ↳ The treatment **P2** (hyperionised Longjumeau water) induces a clear decrease of cytokeratin 16, linked to a hyperproliferative state.

## 3. Psoriasin

The induction of the psoriatic state leads to a strong increase of psoriasin expression in the epidermis.



- ↳ The treatment **P1** (Longjumeau water) slightly reduces psoriasin linked to the alterations of the cutaneous barrier.
- ↳ The treatment **P2** (hyperionised Longjumeau water) clearly reduces psoriasin linked to the alterations of the cutaneous barrier.

## CONCLUSION

These results show that a daily treatment of 4 days with only 2 microliters of water hyperionised with Sublio Ionic WaterBox *Pro* device per cm<sup>2</sup>, allows to reduce three main markers of the psoriatic skin.

