

# HOW TO PROTECT AGAINST COVID-19 WHILE PROTECTING OUR SKIN HANDS?

Salvert M.<sup>1</sup>, Drulhon F.<sup>2</sup>, Buisson A.<sup>1</sup>, Delerue P.<sup>2</sup>, Moulin P.<sup>2</sup>, Chavagnac-Bonneville M.<sup>3</sup>, Guittet N.<sup>2</sup>, Puravel L.<sup>2</sup>, Dulau M-P.<sup>2</sup>, Ardiet N.<sup>1</sup>, Dréno B.<sup>4</sup>, and Guyoux A.<sup>2</sup>

<sup>1</sup>Cutaneous Investigation and Research Center (CIREC), NAOS, R&D Department, Lyon, France; <sup>2</sup>NAOS, R&D Department, Aix-en-Provence, France; <sup>3</sup>NAOS, R&D Department, Lyon, France; <sup>4</sup>Dermatology Department, CHU Nantes, CIC 1413, CRCINA, University Nantes, Nantes, France

## INTRODUCTION

Frequent use of hand sanitizer can cause skin barrier alterations (hydrolipidic film and intercellular lipidic cement disruption) leading to dryness, scaling, itching, burning and even erosions and cracks. Therefore, we developed a safe and efficient alcohol-based formula for hand disinfection according to US FDA and WHO recommendations, that we enriched with lipids. This patented lipo alcoholic biphasic (LB) is composed of 10% biomimetic oily phase (shea oil, squalane), 74.5% (m/m) ethanol, water, and a blue dye to confirm the good homogeneity after shaking. The aim of this work is to assess the immediate and long-lasting protection effect of the lipo alcoholic biphasic on skin barrier, versus a standard hydroalcoholic solution (HS) with glycerin.

## MATERIALS & METHODS

The virucidal activity against enveloped virus (including SARS-CoV-2) was evaluated in clean conditions by the standard test NF EN 14476+A2, the bacterial activity by NF EN 13727+A2 test and the yeasticidal activity by NF EN 13624 test. To evaluate the immediate protecting effect, the residual oily film was measured using a sebumeter on the forearms of 10 females (aged 22 to 43) before, immediately and 15 minutes after a single application of the LB or of the HS (2.4 µL/cm<sup>2</sup>). In a single-blind study, we evaluated the long-lasting protection effect by measuring the transepidermal water loss (TEWL) at day 0 (D0), D7 and D14. Nineteen females (aged 25 to 69) with dry to very dry skin on the hands, and/or with skin prone to atopy, used the 2 products on hands for 14 days (5 sprays on each hand 10 times a day). To avoid mixing from hand to hand, the products were spread with the opposite forearm. The right biceps corresponded to the untreated area. To assess the safety and the subjective efficacy of the LB after 21 days of use (as described for the TEWL), 20 subjects (95% female, aged 23 to 54) were included in an open intra-individual study under medical supervision, using a self-assessment questionnaire. All statistical analysis was performed with the Student t-test.

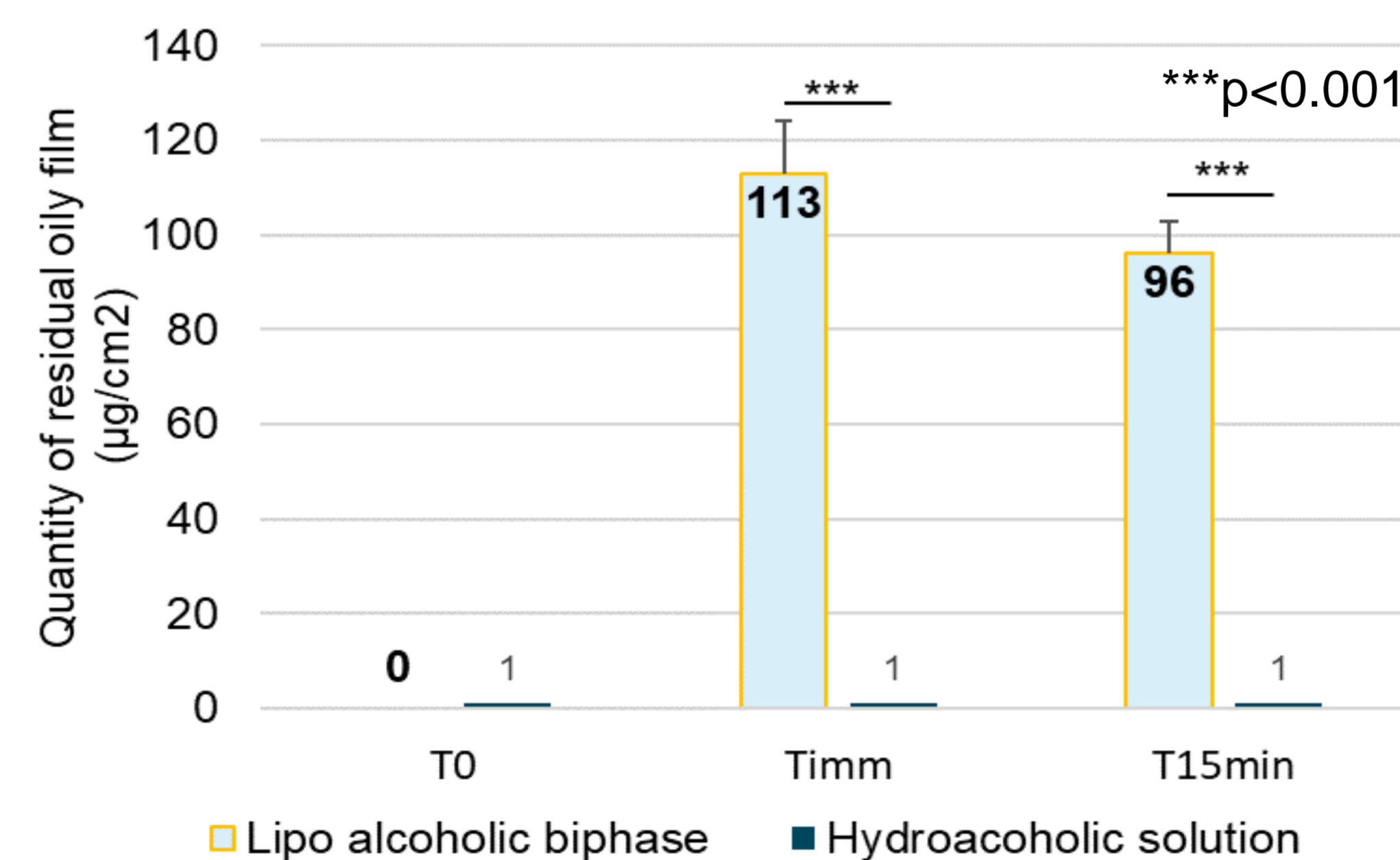
## RESULTS

**VIRUCIDAL, BACTERICIDAL AND YEASTICIDAL ACTIVITY :** the Lipo alcoholic biphasic eliminated in 30 seconds more than **99.9% of enveloped viruses, bacteria, and yeast.**



SKIN BARRIER STUDIES

**Graph 1:** Assessment of the **immediate protecting effect** by sebumetry



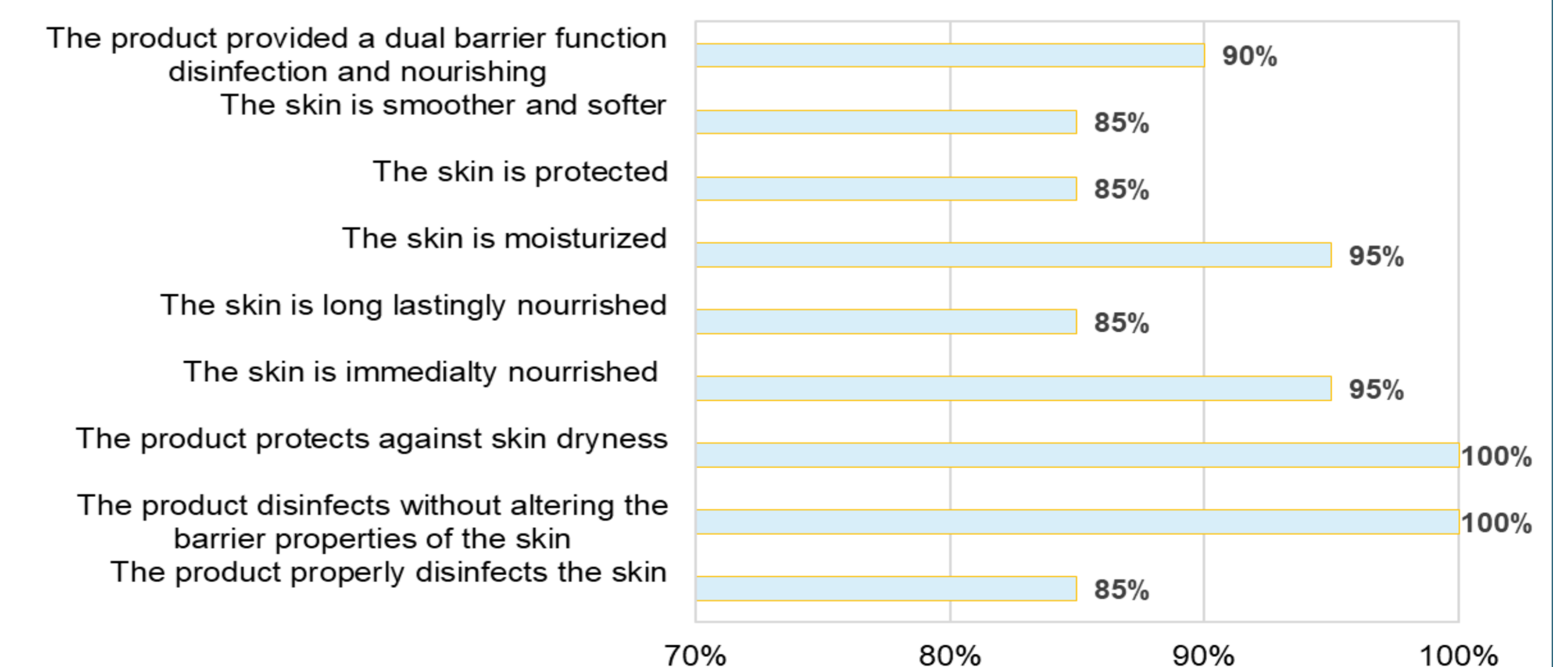
A nourishing oily film left immediately after application contrary to the HS, and remained after 15 min.

**Table 1:** Assessment of **long-lasting protection effect** by the TEWL (\*calculated with the means)

	Untreated		Lipo alcoholic biphasic		Hydroalcoholic solution	
	Δ(D7-D0)	Δ(D14-D0)	Δ(D7-D0)	Δ(D14-D0)	Δ(D7-D0)	Δ(D14-D0)
<b>Median</b>	-0.56	-0.47	-2.72	-3.37	-0.93	-0.32
SEM	0.02	0.05	0.09	0.15	0.12	0.17
<b>Mean</b>	-0.23	-0.15	-2.34	-2.88	-0.83	-0.44
SEM	0.08	0.10	0.26	0.28	0.32	0.36
<b>% of efficacy*</b>	-3.3	-2.1	<b>-19.7</b>	<b>-24.2</b>	-6.8	-3.6

The TEWL was significantly improved on the hands at both D7 and D14, and even from D7 to D14 vs. D0 contrary to the untreated area and the hydroalcoholic solution (all, p<0.001).

**Graph 2:** Assessment of **the subjective efficacy** of the lipo alcoholic biphasic at D21 (somewhat to strongly agreed)



At D21 the product was well appreciated for all items by 85% to 100% of the subjects and was very well tolerated on the hands for 95% of them.

## CONCLUSION

While disinfected hands, this breakthrough lipo alcoholic biphasic protects the skin from alcohol-induced dryness, thanks to the combination of an immediate oily film formation and a long-lasting effect on skin barrier reinforcement, contrary to standard hydroalcoholic solutions. This product is of particular interest for very frequent daily hand washing, for people with a history of hand dermatosis as psoriasis, allergy, atopic dermatitis, or chronic dermatitis.