

# EFFICACY OF A NEW WELL-TOLERATED DERMO-COSMETIC COMPLEX FOR POST-INFLAMMATORY HYPERPIGMENTATION AND SOLAR LENTIGO SPOTS

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## INTRODUCTION & OBJECTIVES

During life, hyperpigmented spots, such as **post-inflammatory hyperpigmentation (PIH)** or **solar lentigo**, may appear after solar exposition<sup>1</sup>. The conventional dermatological treatment is the Kligman's trio<sup>2</sup>; composed of hydroquinone, which decreases the melanogenesis, retinoic acid, which promotes epidermal renewal, and hydrocortisone, an anti-inflammatory agent. Nevertheless, Kligman's trio treatment induces several skin adverse reactions, and consequently cannot be used more than four consecutive months and relapse may appear afterwards<sup>3</sup>. **The aim of this work was to develop a dermo-cosmetic complex for hyperpigmented spots that can be used all year long and without any side effect.**

## MATERIALS & METHODS

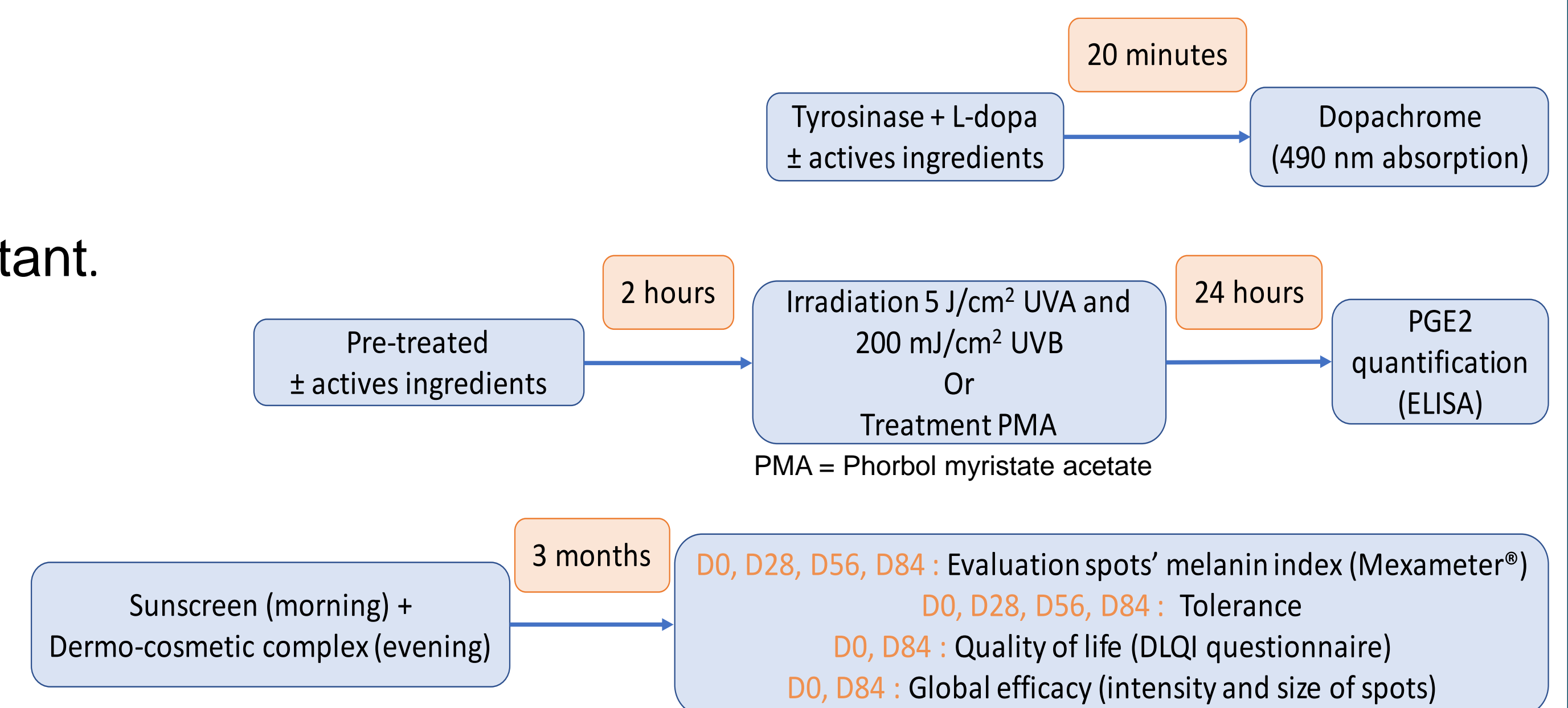
**Active ingredients:** Andrographolide from the leaves of *Andrographis paniculata*, glabridin from the roots of *Glycyrrhiza glabra (GB)*, azelaic acid and niacinamide alone or in association.

**Tyrosinase activity:** *In tubo* dopachrome quantification at 490 nm.

**Anti-inflammatory effect:** *In vitro* PGE2 quantification in NHEK supernatant.

**Clinical efficacy:** *In vivo* study on 61 subjects (30 PIH and 31 solar lentigos) with a mild to moderate intensity. Dermo-cosmetic product containing the complex of 3 compounds + niacinamide + saccharide isomerate.

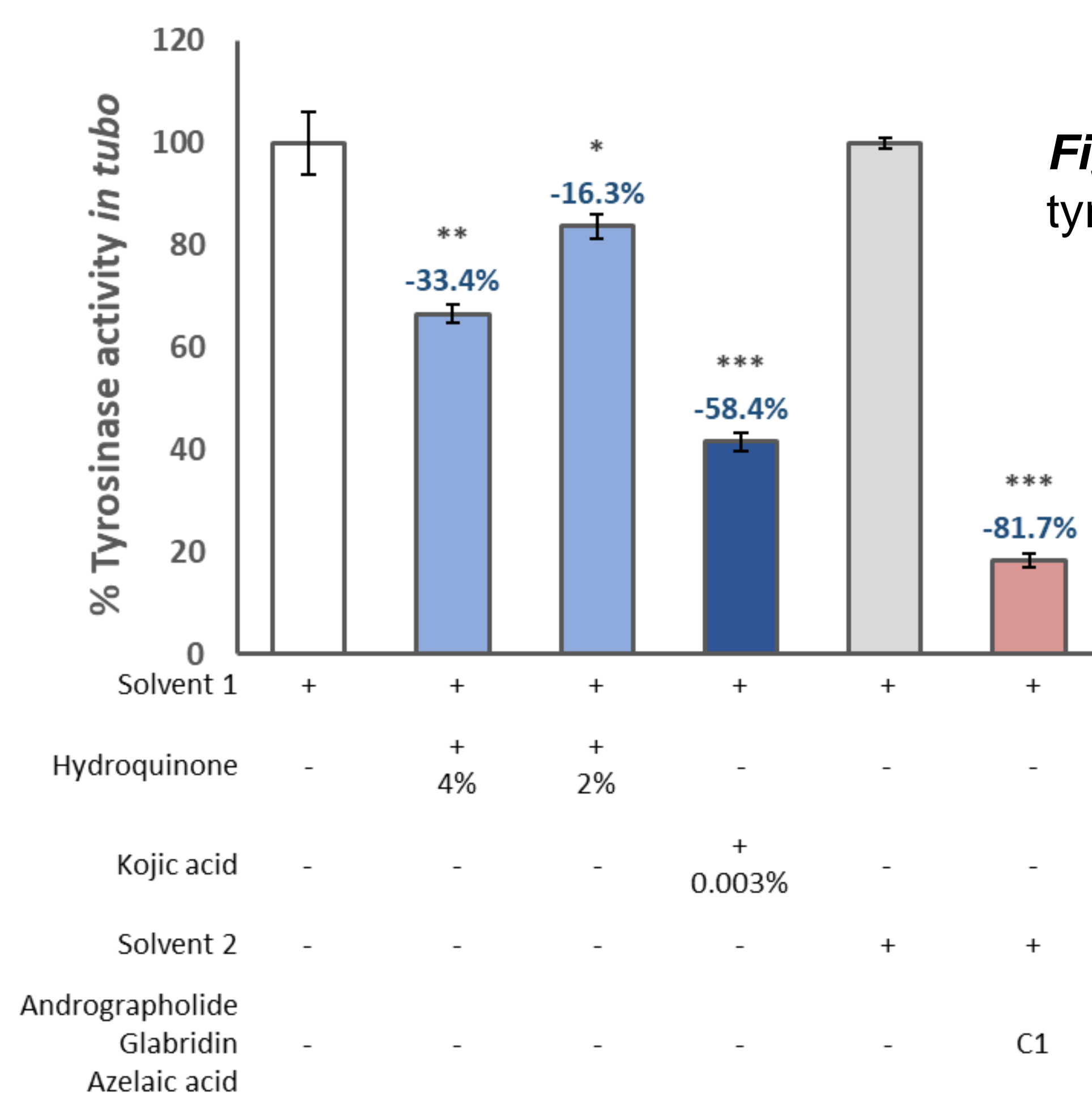
**Statistical analysis:** Nonpaired equal variance Student's t-test for *in tubo* and *in vitro* tests and a paired t-test or a Wilcoxon's test for clinical study. \* $p < 0.05$ , \*\* $p < 0.01$  and \*\*\*  $p < 0.001$



## RESULTS

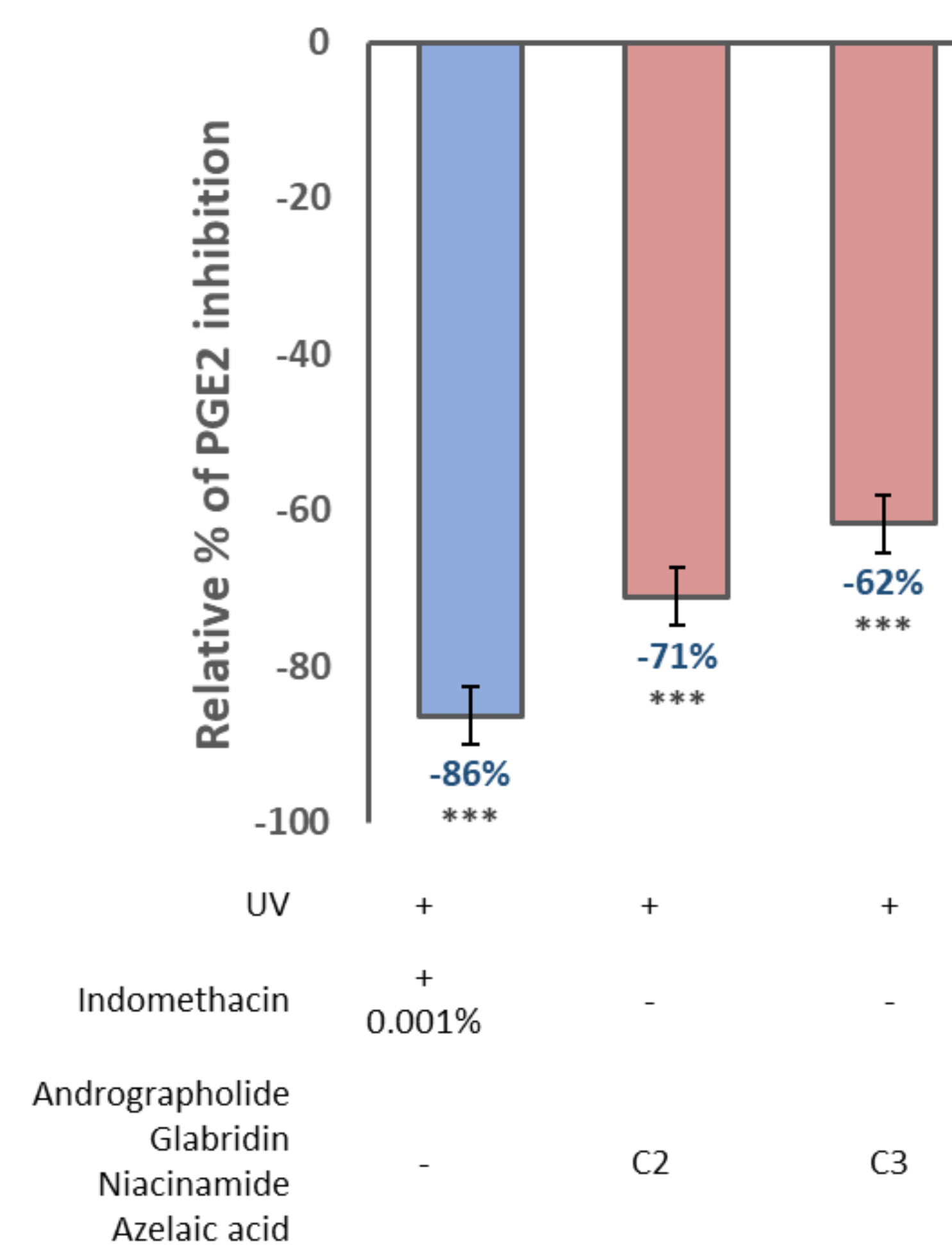
*In tubo*, the complex of 3 compounds inhibited the tyrosinase activity by 81.7% ( $p < 0.001$ ). This inhibition was superior to reference controls hydroquinone and kojic acid (up to 58.4%) (**Figure 1**). *In vitro*, the complex of 3 compounds + niacinamide decreased down to 71.0% ( $p < 0.001$ ) the UV-induced PGE2 secretion compared to the irradiated control (**Figure 2**). GB alone decreased down to 79.7% ( $p < 0.05$ ) the PMA-induced PGE2 secretion (data not shown).

### Tyrosinase activity

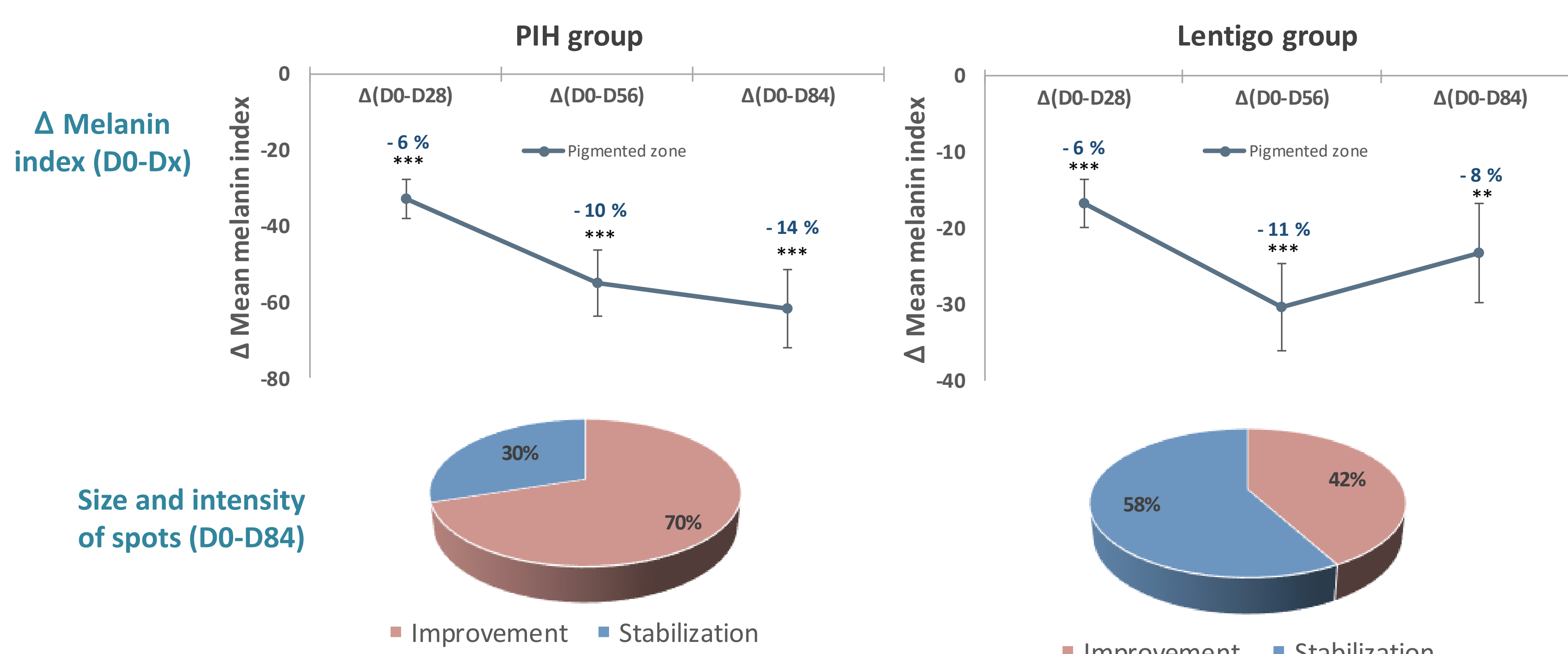


**Figure 1:** Inhibition of tyrosinase activity *in tubo*.

### Anti-inflammatory effect



**Figure 2:** Inhibition of UV-induced PGE2 secretion by NHEK *in vitro*.



**Figure 3:** Evaluation of melanin index and size and intensity of spots in PIH and lentigo subjects.

### Clinical efficacy

*In vivo* application of the product containing the active complex showed that the melanin index decreased in PIH subjects until 14% ( $p < 0.001$ ), and in subjects with lentigos until 11% (**Figure 3**). 70% and 42% of subjects presented an improvement in PIH and lentigos groups respectively, all other subjects had a stabilization of intensity and size of their spots (**Figure 3**). After 3 months, the PIH and the lentigo panel's quality of life was significantly improved ( $p < 0.001$ ). The product was well-tolerated (only 1 subject presented relevant functional signs).

## CONCLUSION

***In vivo*, the dermo-cosmetic complex is efficient in reducing PIH or lentigo spots via inhibition of the tyrosinase activity and the UV-induced PGE2 secretion. This well-tolerated product can be used as a solution for longer period without interruption.**