

Use of *Lespedeza Capitata* leaf/stem extract (Bio-Chronocell) in skin care for woman with shifted circadian rhythm.

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Introduction

Environmental factors like intensive lifestyle, overexposure to blue light, excessive stress, but also jetlag or shift work may disrupt the body's circadian rhythm. In skin it affects transepidermal water loss (TEWL), keratinocytes proliferation, skin blood flow and skin temperature leading to microdamages and accelerated aging.

In *in-vitro* model (skin explant), it has been proven that *Lespedeza Capitata* leaf/stem extract (Bio-Chronocell) improves circadian rhythm and synchronization. After exposure to blue light, it restores the phase rhythmicity and improves the amplitude of the circadian rhythm protein expressions: Bmal-1, Per-2 and Cry-1. Moreover, Bio-Chronocell enhanced the Nrf2 pathway and thus the detoxification process in the skin. It inhibits MMP-1 and the skin oxidation caused by blue light by regulation of lipid oxidation markers 4-HNE and MDA. It also reduces protein carbonylation and nitrotyrosine as a marker of vessel vasodilation (Clariant International AG, 2018).

The aim of this study was to investigate if Bio-Chronocell used in cosmetic products is well tolerated and if it can improve the skin health of women who are exposed to blue light emission from electronic screens for more than 10 hours per day.

Methods

Four cosmetics products were tested: day cream 2711, night cream 2712, eye serum 2713 and face mask 2714. All of them contained Bio-Chronocell among active ingredients. The study population was 157 women (aged 23-49) that claimed they were exposed to electronic screens for more than 10 hours daily. All skin types were accepted. Skin parameters were measured at the baseline and after 3 week of cosmetics usage (skin smoothness, Sesm, desquamation level, Sesc, wrinkle volume – Visioscan; moisturization – Corneometer, wrinkle number – Visia, skin redness - Mexameter). All testing was performed by experienced technicians, using a single device, in the same room and under the same environmental conditions. Cosmetic satisfaction and self-reported changes in skin appearance were measured on a analogues scale.

Results

Day cream 2711: we observed improvement in skin moisturization by 45% and the reduction of wrinkles volume by 35% (Fig. 1). Volunteers self-reported increase in skin smoothness by 54% and improvement in skin appearance by 75% (in analogue scale, data not shown). Self-assessment taken after 3 weeks of day cream usage (Fig. 3) showed improvement in skin moisturization for all participants (100%). Moreover volunteers noticed that their skin become: soft (95%), revitalized (86%), relaxed nad full of energy (90%) and elastic (81%).

Night cream 2712: 88% of the volunteers noticed that their skin was regenerated (Fig. 6). In subjective scale improvement of skin condition by 40% was observed (data not shown). The objective decrease of desquamation level by 44% was reported (Fig. 4).

Eye serum 2713: level of skin redness and volume of the mimic wrinkles measured subjective scale was reduced by 40% and 47%, respectively (data not shown). Self-assessment taken after 3 weeks of eye serum usage showed improvement in skin moisturization and elasticity (96% and 87%, respectively). Moreover volunteers noticed that their skin become: sooth and less dry (96%), and protected against external factors (87%).

Serum mask 2714: we observed instrumental improvement in skin moisturization by 32% and in skin smoothness by 31% (Fig. 10). Self-reported skin appearance was improved by 78% (in analogue scale, data not shown). Self-assessment taken after 3 weeks of serum mask usage showed that skin was relaxed, full of energy and moisturized (91%). Moreover volunteers observed: skin soft (87%), revitalized (83%) and elastic (70%).

Conclusion

Understanding of the role that circadian rhythm plays in overall skin health helps us propose adequate skin care to customers. The tested cosmetic products that contained Bio-Chronocell were shown to significantly reduce signs of cutaneous fatigue and premature aging. All of them were well tolerated even by sensitive skin. They provided protection against the negative impact of blue light from electronic screens and other external stress factors.

Results – day cream 2711

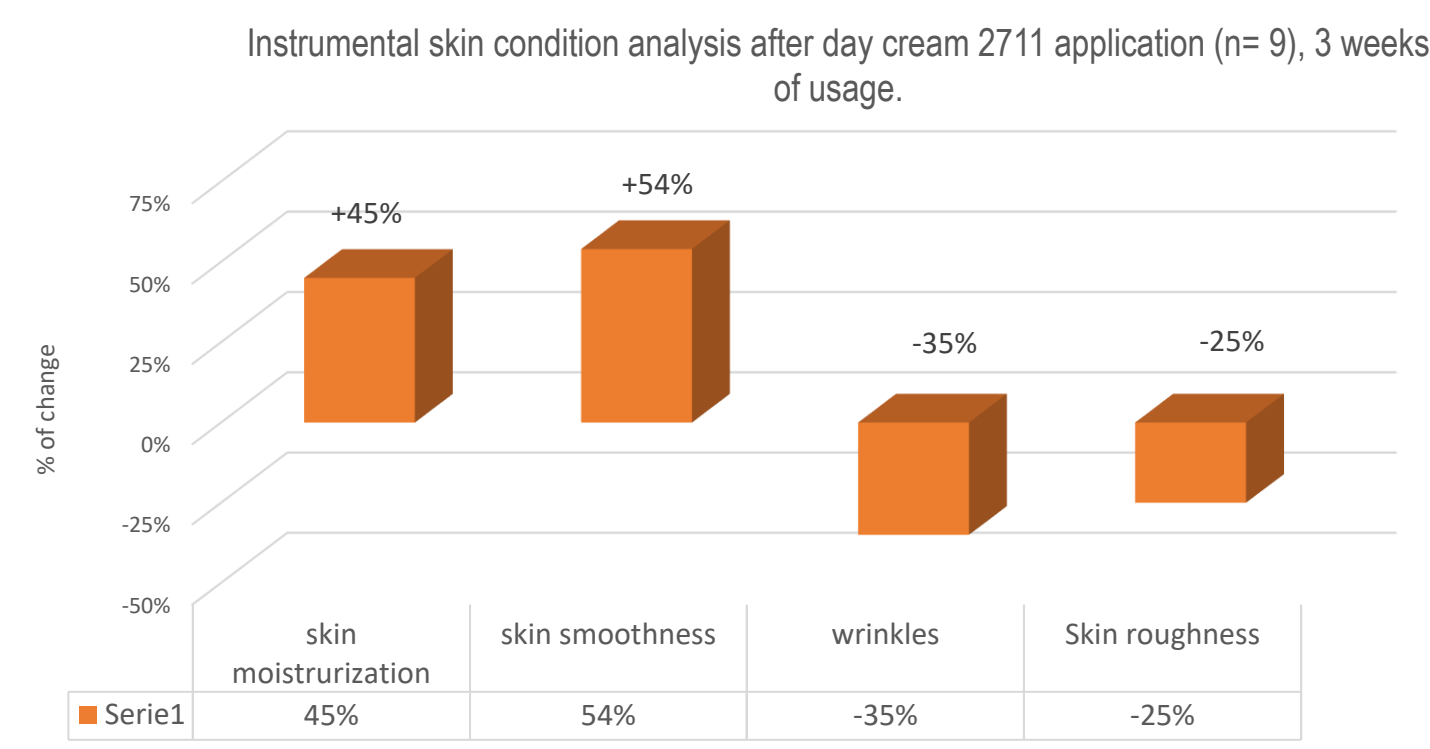


Figure 1. Instrumental skin analysis measured at baseline (before application) and after 3 weeks of using day cream. Biometric measurements showed an improvement in skin moisturization by 45% and skin smoothness by 54%. Wrinkles were reduced by 35% and skin roughness decreased by 25%.

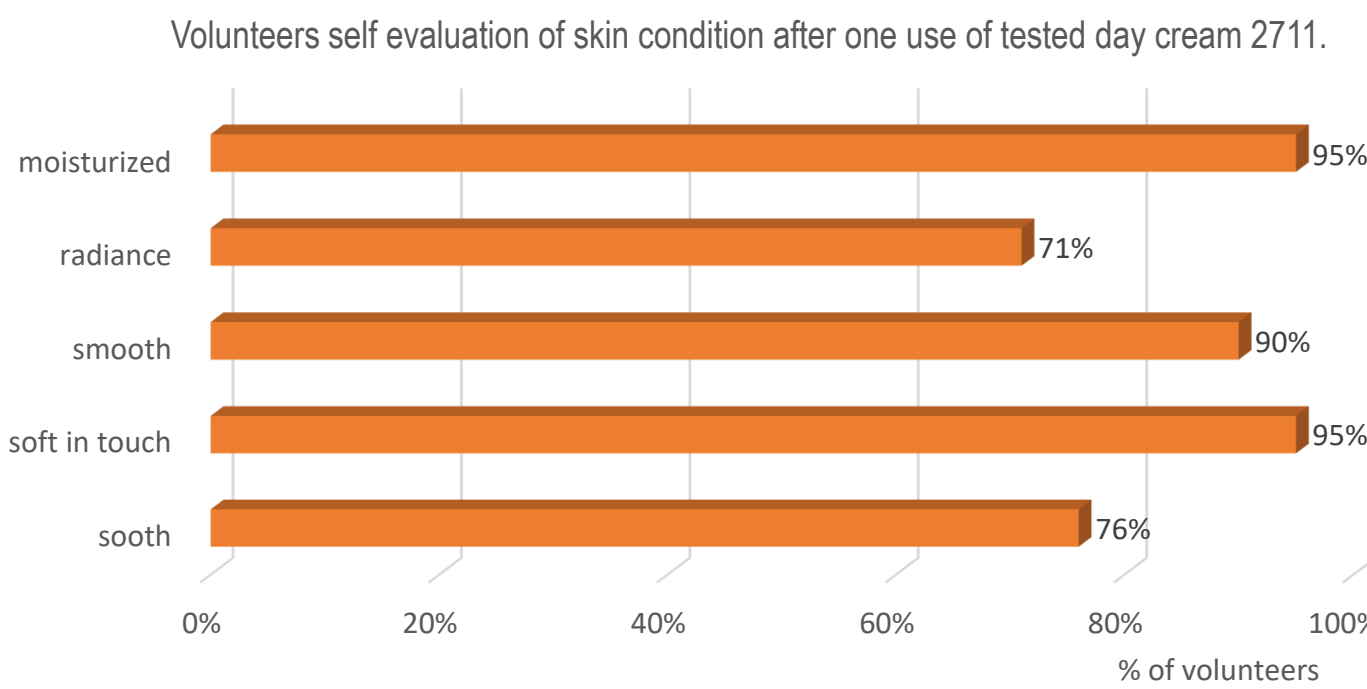


Figure 2. Volunteers self-assessment taken after first usage of tested day cream showed improvement in skin moisturization for 95% of participants. All of them noticed the skin was soft in touch. Moreover volunteers observed that their skin become: radiance (71%), smooth (90%) and sooth (76%).

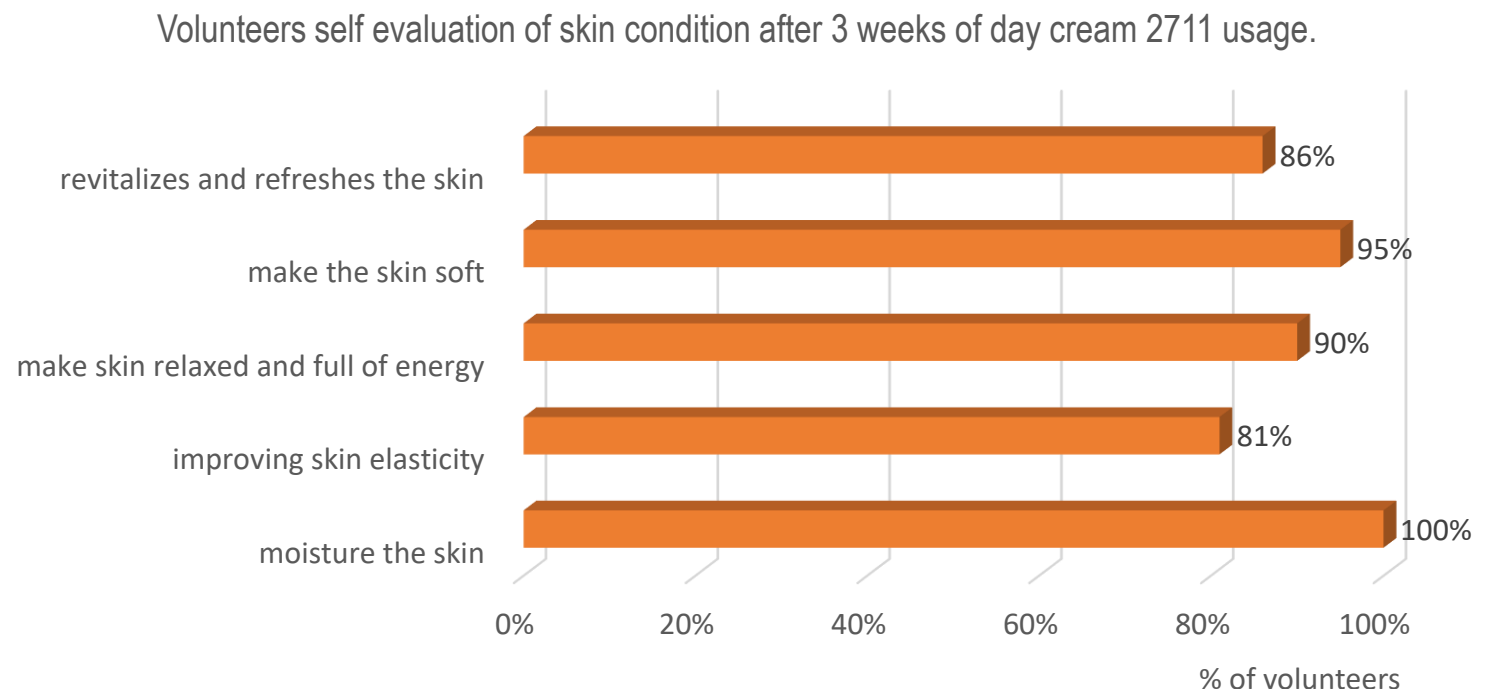


Figure 3. Volunteers self-assessment taken after 3 weeks of tested day cream usage showed improvement in skin moisturization for all participants (100%). Moreover volunteers noticed that their skin become: soft (95%), revitalized (86%), relaxed nad full of energy (90%) and elastic (81%).

Results – night cream 2712

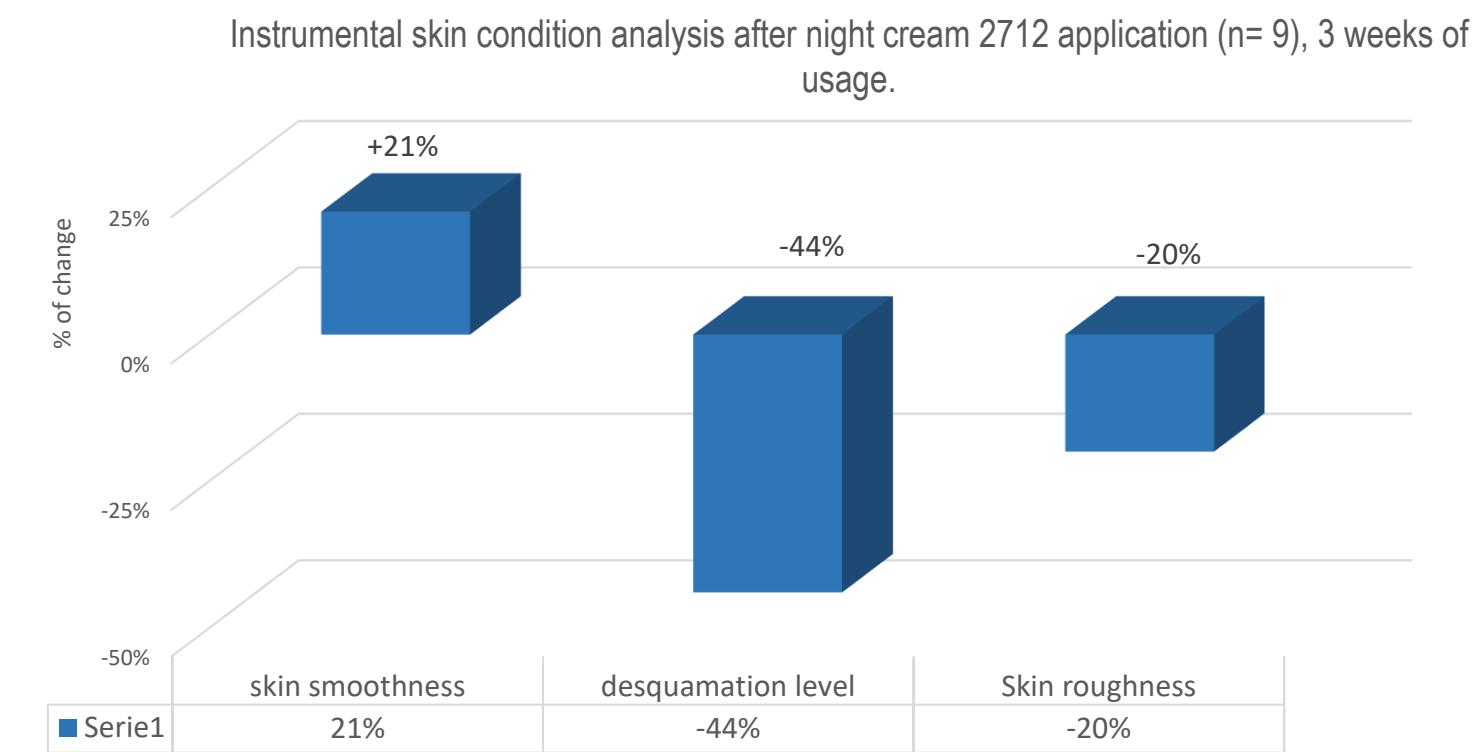


Figure 4. Instrumental skin analysis measured at baseline (before application) and after 3 weeks of using night cream. Biometric measurements showed an improvement in skin smoothness by 21%. Desquamation level was reduced by 44% and skin roughness decreased by 20%.

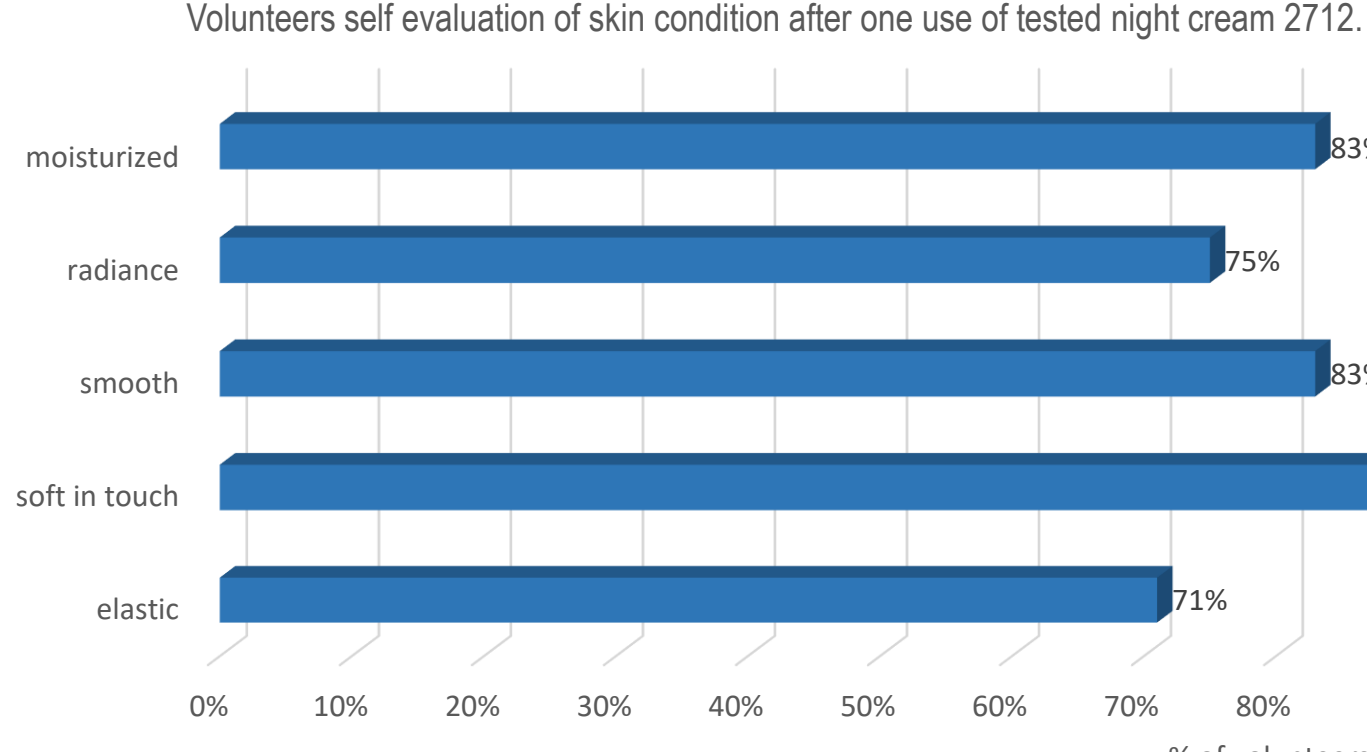


Figure 5. Volunteers self-assessment taken after first usage of tested night cream showed improvement in skin moisturization for 83% of participants. Moreover volunteers observed that their skin become: radiance (75%), smooth (83%), soft in touch (88%) and elastic (71%).

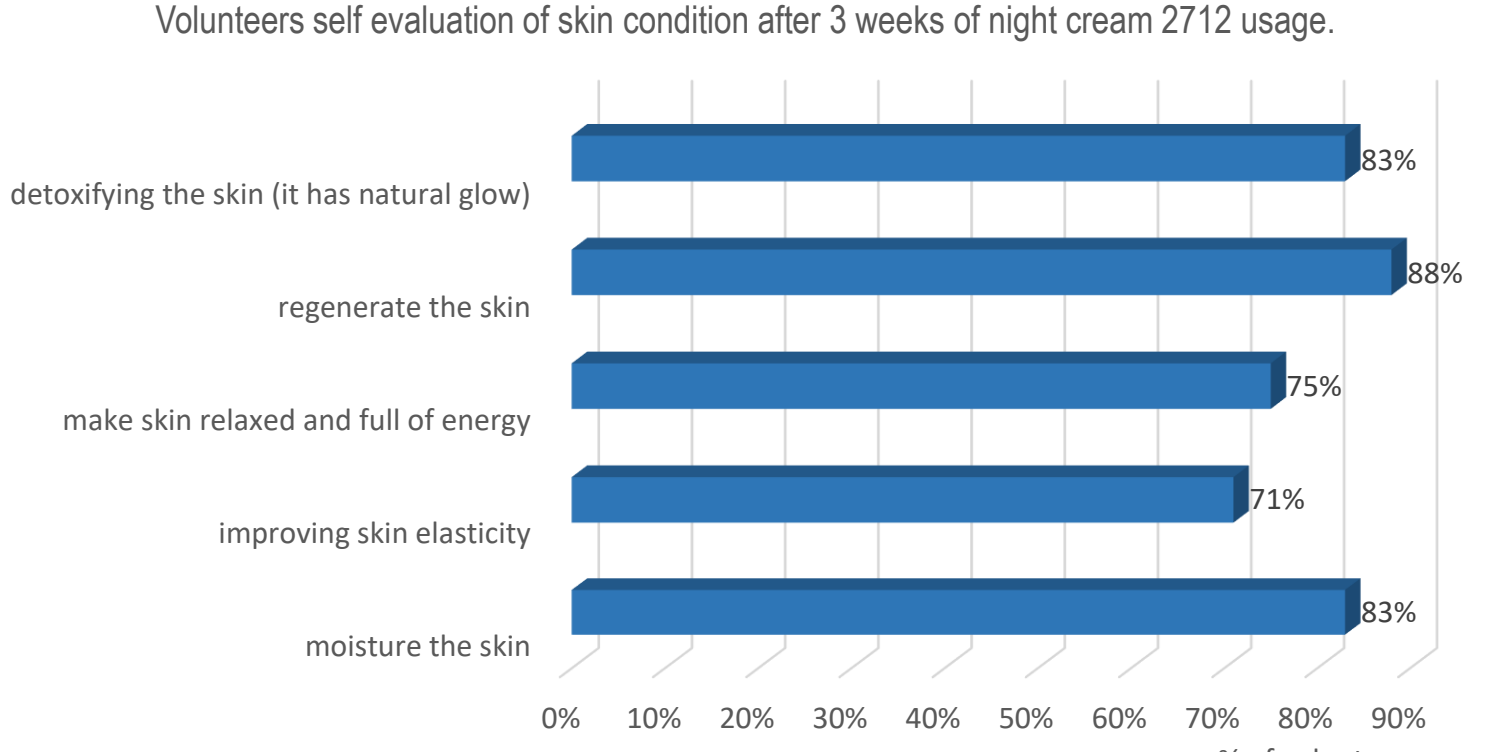


Figure 6. Volunteers self-assessment taken after 3 weeks of tested night cream usage showed improvement in moisturization and detoxifying the skin (83%). Moreover volunteers noticed that their skin become: regenerate (88%), relaxed and full of energy (75%) and elastic (71%).

Results – eye serum 2713

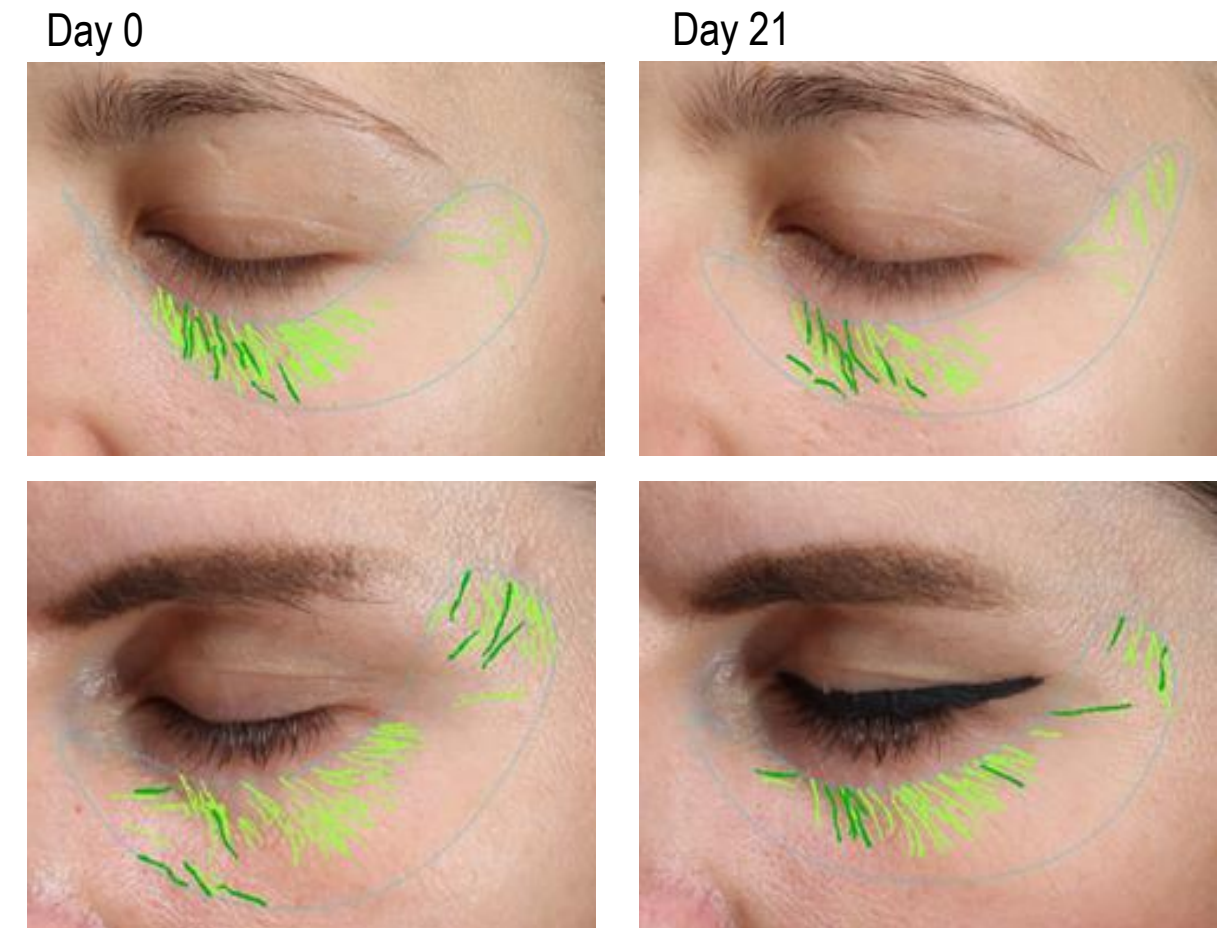


Figure 7. Instrumental analysis showed the reduction in wrinkles by 27% nad 36%, respectively, after 3 weeks of eye serum 2713 application.

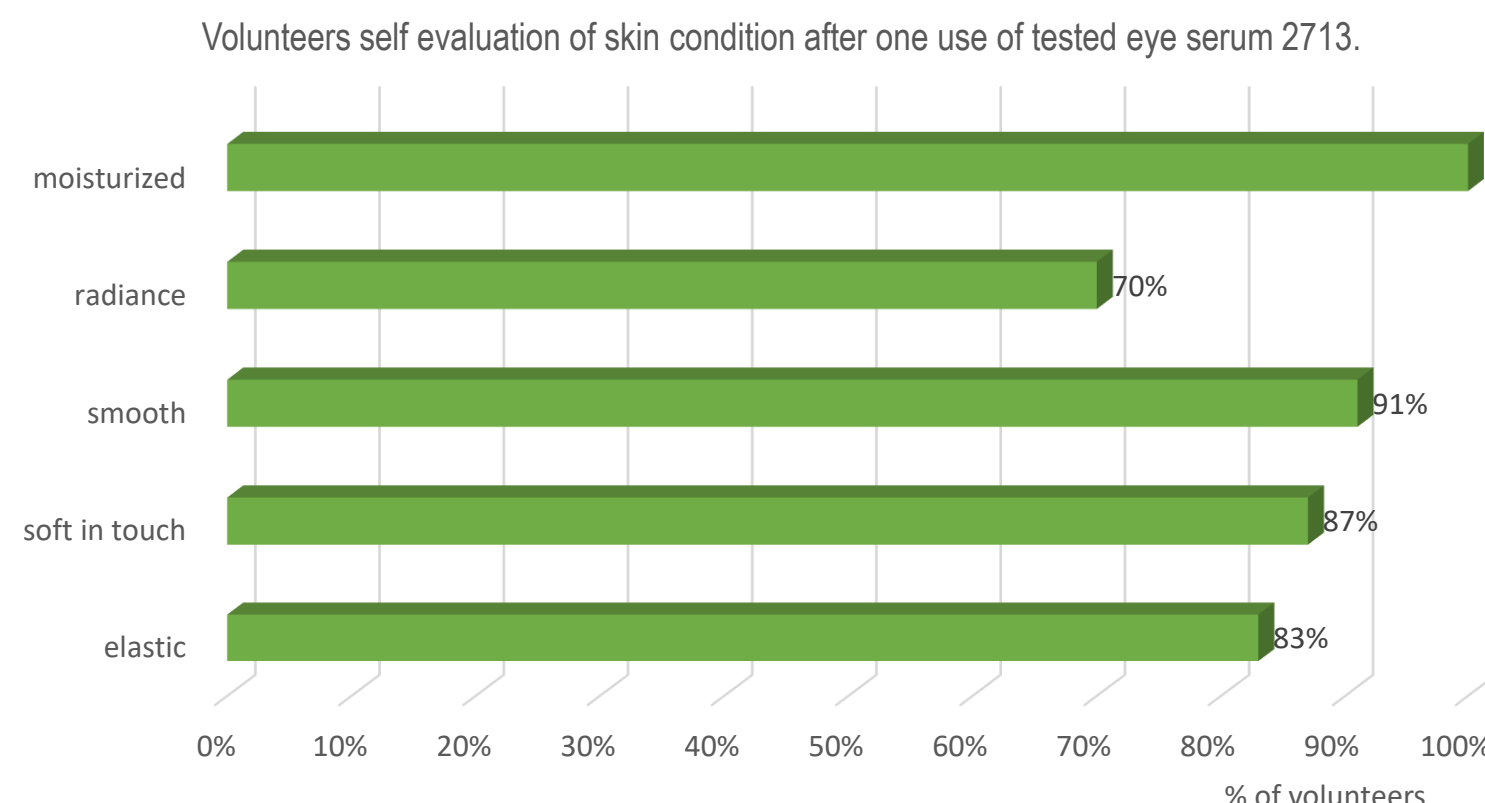


Figure 8. Volunteers self-assessment taken after first usage of tested eye serum showed improvement in skin moisturization for all participants (100%). Moreover volunteers noticed that their skin become: radiance (70%), smooth (91%), soft in tough (87%) and elastic (83%).

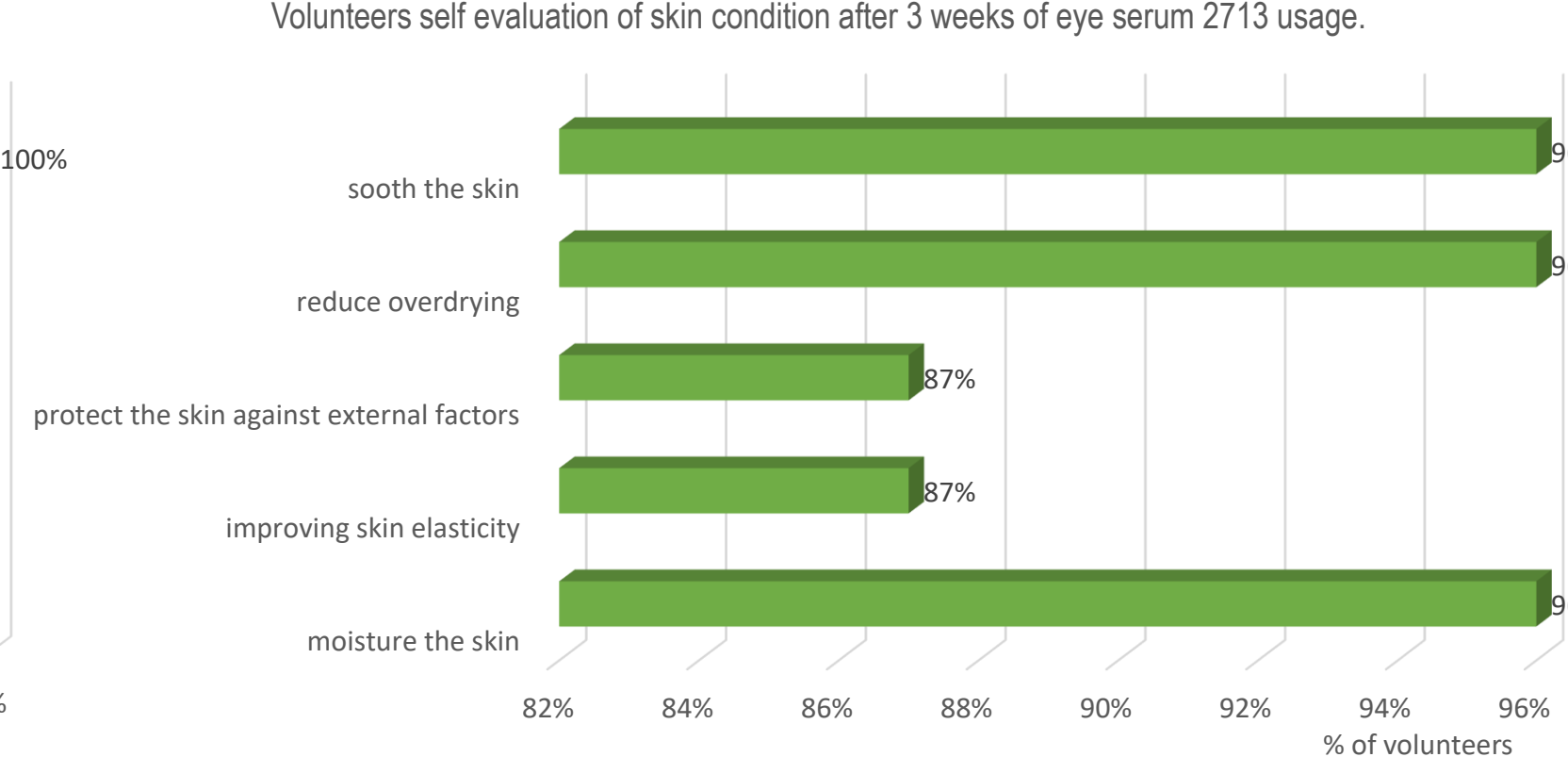


Figure 9. Volunteers self-assessment taken after 3 weeks of tested eye serum usage showed improvement in skin moisturization and elasticity (96% and 87%, respectively). Moreover volunteers noticed that their skin become: sooth and less dry (96%), and protected against external factors (87%).

Results – serum mask 2714

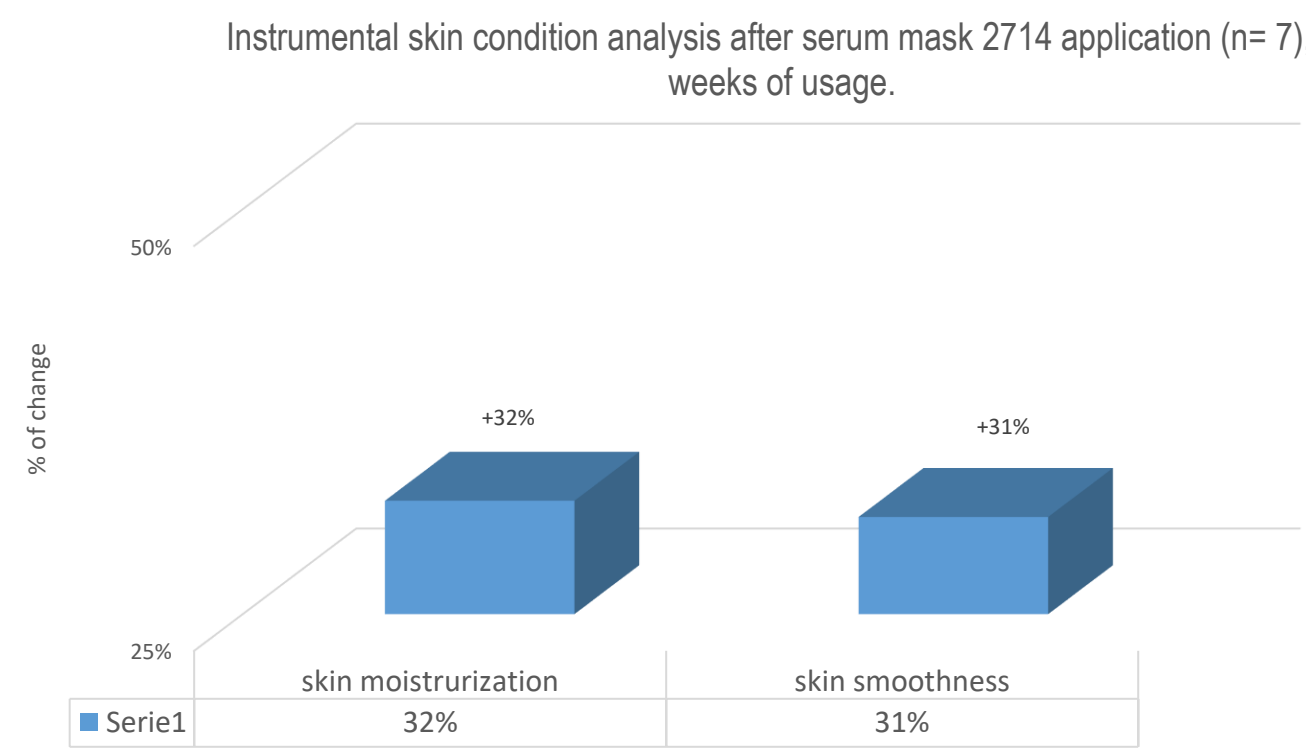


Figure 10. Instrumental skin analysis measured at baseline (before application) and after 3 weeks of using serum mask. Biometric measurements showed an improvement in skin moisturization by 32% and skin smoothness by 31%.

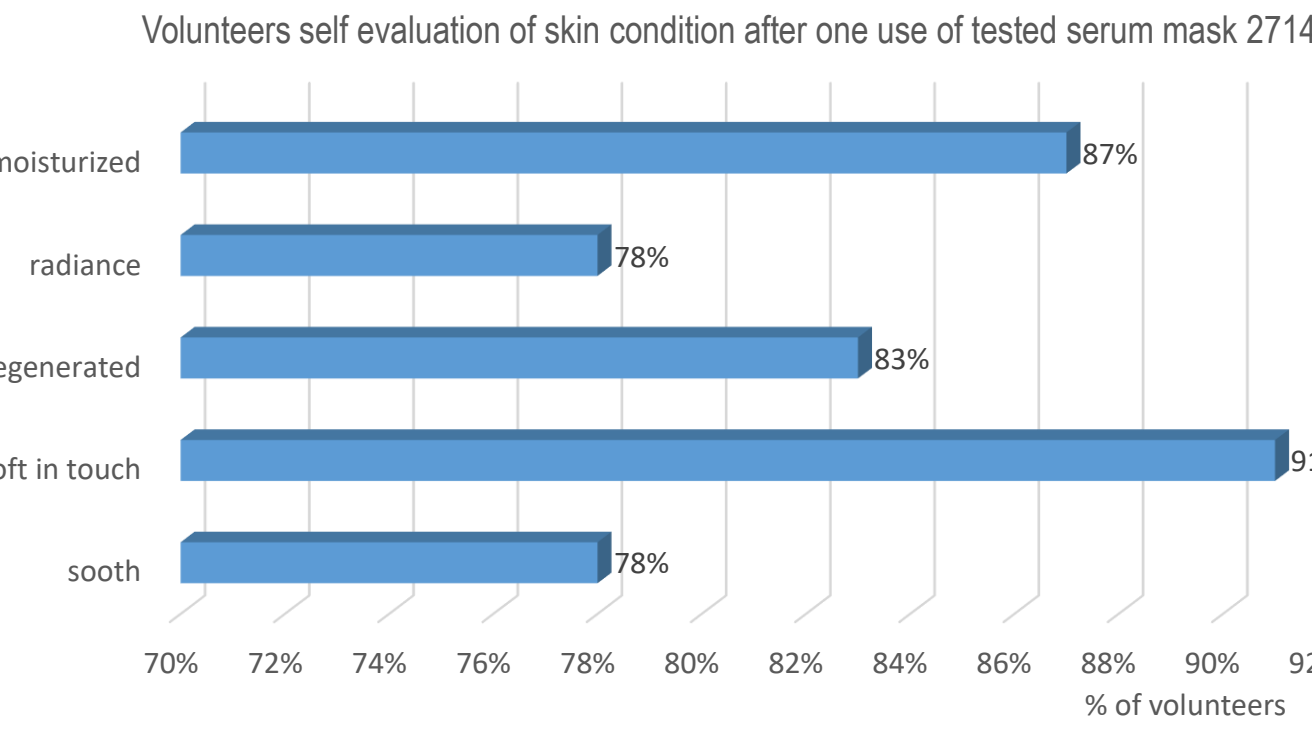


Figure 11. Volunteers self-assessment taken after first usage of tested serum mask showed improvement in skin moisturization for 87% of participants. 91% of them noticed the skin was soft in touch. Moreover volunteers observed that their skin become: radiance (78%), regenerated (83%) and sooth (78%).

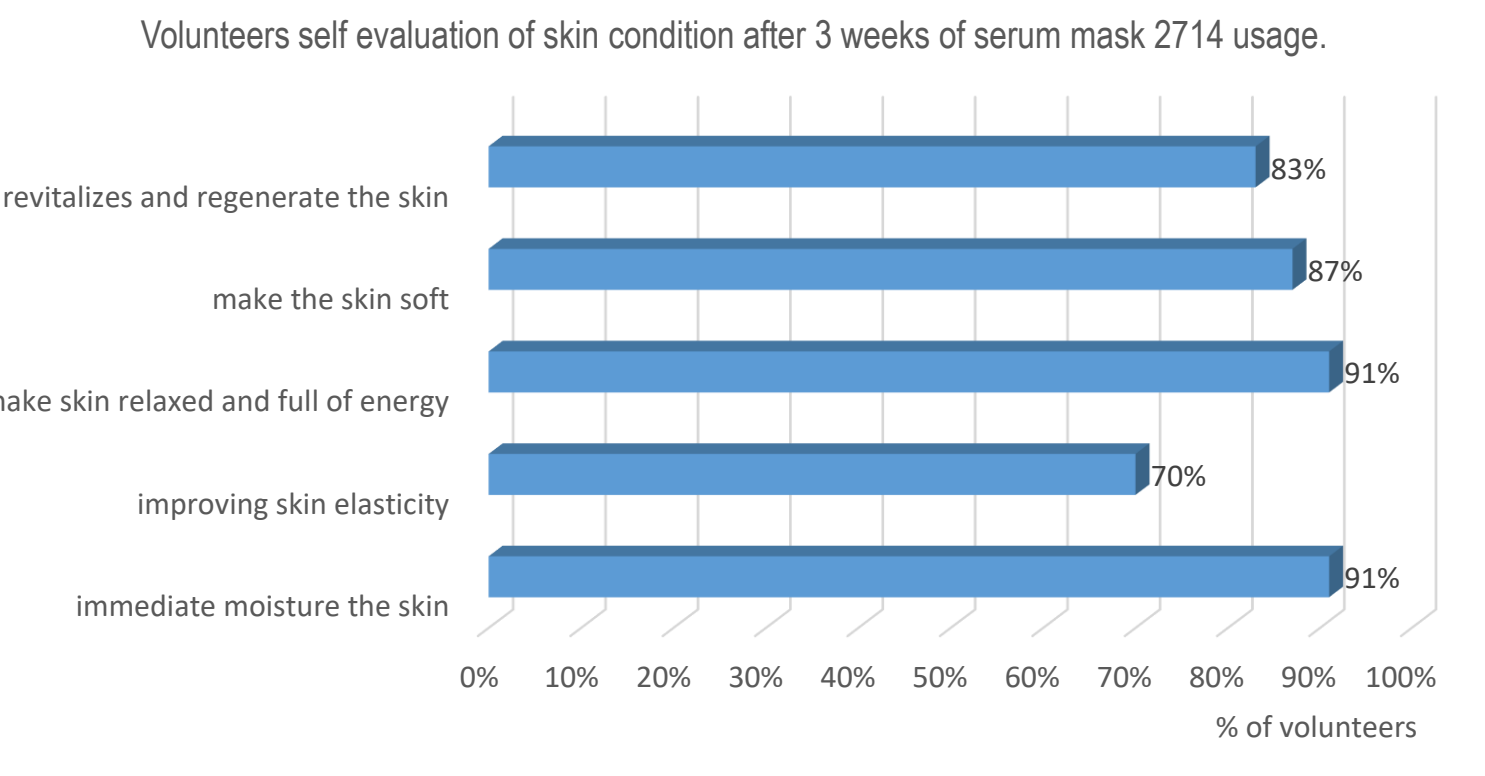


Figure 12. Volunteers self-assessment taken after 3 weeks of tested serum mask usage showed that skin was relaxed, full of energy and moisturized (91%). Moreover volunteers observed: skin soft (87%), revitalized (83%) and elastic (70%).