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Efficacy of SPF70 sunscreen to protect skin against visible light and air pollution



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Background: Sunscreens are known to protect from sun damage mainly caused by UVA/UVB lights, however the effects of visible light (VL) have been extensively investigated and correlated with skin pigmentation. Also, chronic exposure to pollution, mainly particulate matter (PM), contribute to the photoaging and skin pigmentation being a possible emerging etiologic agent for the development of melasma. Considering that, the development of dermo-cosmetic able to protect skin from VL and PM are essential to maintaining skin health. Thus, the aim of this study was to evaluate the efficacy of a facial sunscreen SPF 70 formulation containing vitamin C derivative, carnosine, melanin analogue, iron oxides and AHR antagonist to protect skin cells against VL and PM damage for the improvement of photo-damage. Ex vivo studies was conducted to evaluate the impact of PM and VL on keratinocytes viability and melanin production. The sunscreen containing vitamin C, carnosine, melanin analogue, iron oxides, and AHR antagonist presented VL protection with a transmission of visible light spectrum reduction by 67.93%.

Results: showed that the pollution had a negative impact on keratinocytes viability and increases melanin syntheses by 93% compared with control non treated group. However, the FPS70 protective formula showed a protective effect increasing cells viability by 66%, and decreased melanin stimuli by 39%. These results increased the knowledge about the impact of VL and pollution to the skin and showed that the SPF70 sunscreen composition was able to protect cells against external aggressors by acting as a true protective shield against VL and pollution.

Commercial disclosure: ADCOS Dermocosméticos.

16050

Global mixed infections in onychomycosis



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Background: Onychomycosis is estimated at a global prevalence of 10% usually due to *Trichophyton rubrum*. Traditional culture identification risks overestimating dermatophytes by inhibiting the growth of potential nondermatophyte mould (NDM) environmental contaminants which could also be causative agents.

Methods: To determine the prevalence of mixed infections in a global population, nail samples from onychomycosis patients in Brazil, Canada, and Israel (n = 331) were analyzed by molecular methods for the presence of dermatophytes and 5 NDMs.

Results: *T. rubrum* was detected in 98% (323/331) of infections with the majority mixed (54%, 178/331). The infection type was more likely to be mixed in samples from Brazil, but more likely to be a dermatophyte in samples from Canada and Israel ($\chi^2 = 89.48$, $df = 4$, $P < .001$). In Canada and Israel combined, increase in age was positively correlated with increase in both dermatophyte infections (Tb = 0.17, $P = .045$) and mixed infections (Tb = 0.20, $P = .028$).

Conclusions: The most common cause of onychomycosis was *T. rubrum*. Mixed infections of onychomycosis have been reported higher than ever at 54% of a global population with the majority occurring in Brazil. The aging population is at greater risk for onychomycosis (both dermatophyte and mixed infections) in Canada and Israel. Molecular methods have revealed that a portion of onychomycosis may be caused by mixed infections of a dermatophyte as a co-infecting agent with one or more NDM. Determining mixed infections is necessary before evaluating the best therapies for this difficult to treat disease.

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16046

Long-term efficacy and safety of daily efinaconazole 10% nail solution for mild to moderate onychomycosis



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Background: Topical efinaconazole (EFN) shows mycologic cure (MC) of 53%-55%, complete cure (CC) of 15%-18%, and few EFN-related reactions (1.2%-5.5%) following 12-month use in patients 18-70 yrs with mild-moderate onychomycosis.

Methods: A long-term study was initiated to evaluate efficacy and safety of EFN 18 or 24 months. The 18-month group used placebo to M6, then EFN for 18 months. A significant over-70 population (37%), and more severe infection based on baseline clear nail measured at PNF was included in this trial.

Results: Outcomes from M12 to M24 were reviewed for trends of improved efficacy versus published M12 outcomes, and to ensure long-term safety remains acceptable. After 12-14 months of EFN, MC was 58%-64%, similar to published M12. The study is ongoing, with 29 of 101 subjects completed to M24. For completed subjects, MC at M24 ranges from 75% to 82%. CC remains at around 17%, similar to published M12. It remains to be seen if CC will increase as more subjects complete the trial. Reaction risk was similar to published M12, with 4 out of 101 subjects to date having a reaction to EFN.

Conclusions: In the 28% of subjects that completed the trial no difference in CC was established. The fact that severe nail infections were included based on clear nail measured at PNF may contribute to that and needs further investigation. Clear improvements in MC to M24 (75%-82%) suggest EFN beyond M12 produces antifungal benefit without increased risk, but even longer use/follow-up periods may be needed for patients to show clinical success.

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16051

Intensity-modulated radiation therapy for the treatment of dissecting cellulitis



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A 52-year-old man with hepatitis B and end-stage renal disease presented to clinic for severe, refractory dissecting cellulitis (DC). He previously failed topical and oral antibiotics, intralesional corticosteroids, isotretinoin, and adalimumab. Due to disease severity and the patient's extensive comorbidities the patient was referred to radiation oncology. Understanding the risks of brain and eye radiation exposure including memory loss and development of radiation-induced malignant neoplasm, he proceeded with intensity-modulated radiation therapy (IMRT) receiving 3000 cGy total administered over fifteen fractions. Treatment resulted in epilation of the area, the desired radiotherapy treatment end point for DC, with minimal acute morbidity. Radiotherapy is an established treatment for DC with efficacy approaching 100%; however, its use has been limited because traditional radiotherapy modalities (eg electron beam) were unable to shape radiation beams around the convexity of the scalp without causing undertreated "cold spots," overtreated "hot spots," or excessive radiation exposure to adjacent structures (eg, brain, eyes, lacrimal duct, parotid gland, oral cavity). This case is the first reported case treating DC using IMRT, a sophisticated radiation modality which uses 3-dimensional imaging-guided mapping in conjunction with individual radiation beam modulation to tightly focus radiation. IMRT uses a combination of advanced pre-planning imaging with adjustable beam intensity to account for individual scalp shape and limit radiation exposure to surrounding organs while delivering a comprehensive dose homogenous treatment plan. This case highlights that widespread availability of IMRT makes radiotherapy for DC a much more attractive option in refractory cases or in cases where immunomodulatory therapy is contraindicated.

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