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SUMMARY OF "FURTHER INVESTIGATION OF THE RISK OF SKIN CANCER ASSOCIATED WITH THE USE OF UV NAIL LAMPS"

-Two of the seventeen devices 'measured' less than 1.3 mW/cm2, but thirteen of the seventeen (more than 75%) of the devices had a median irradiance higher than 9 mW/cm2. If we take a figure of 10 mW/cm2 and suppose a 10 minute cure than 10 mW/cm2 x 60 sec/minute x 10 minutes = 6 J/cm2.

- The study concluded it would take "multiple" visits to reach the threshold for DNA damage.

- Based on their research, "multiple visits" would **be 10 visits** to reach the threshold for DNA damage that can lead to skin damage!!!

Letters

RESEARCH LETTER

Further Investigation Into the Risk of Skin Cancer Associated With the Use of UV Nail Lamps

Use of UV radiation in nail salons for drying and curing polishes has come under scrutiny owing to concerns for carcinogenesis.[1,2] A few recent studies evaluated potential irradiation scenarios and concluded that UV nail polish drying lamps pose only a small risk to clients.[3] However, these studies lacked randomized light sampling from commercial salons.

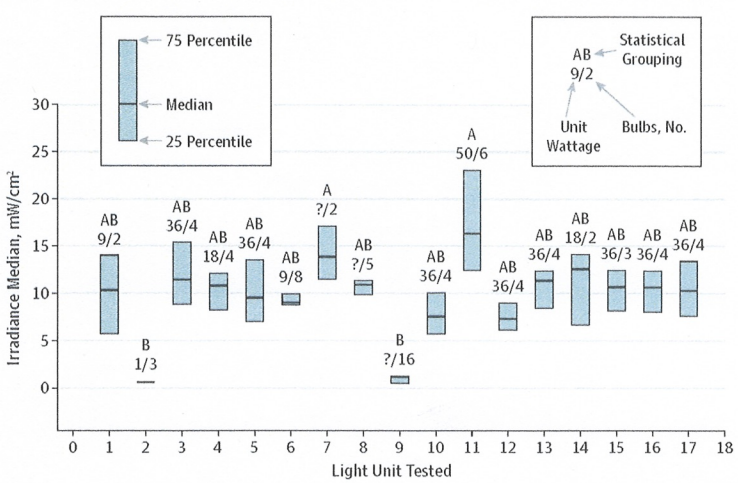
We conducted a small study based on random UV light sampling in nail salons in 2 geographic locations to evaluate the unweighted UV-A and UV-B irradiance of a variety of nail polish drying devices. Our study differed from those previously published by highlighting the variety of UV light lamps used in commercial nail salons as well as the varying UV irradiance emitted within each individual device. Finally, we evaluated the risk to the user by comparing median irradiance with an energy density of UV-A shown to cause DNA damage.

Methods | Because nail polish drying lamps primarily emit UV-A, we chose to use the UV-A/UV-B light meter by Sper Scientific (model No. 850009), which measures primarily the spectrum of 280 to 400 nm.[4] Using this meter, drying lamp devices within a sample of commercial salons were tested. The median irradiance was measured from 5 different positions within each device to take into account potential different hand positions by the client.[5] The numbers of light elements, as well as the wattage, were recorded for each device. Statistical analysis was performed using the Shapiro-Wilks test; however, the data failed normality testing because the local irradiance values of the 5 different positions were not homogeneous. Therefore, Kruskal-Wallis 1-way analysis of variance on Spearman rank coefficients was performed, using the Tukey test for post hoc, pair-wise median comparisons. Statistical testing was performed at a preset alpha of $\alpha = .05$. Institutional review board approval was waived because human participants were not involved in the study.

Results | Seventeen different light sources from 16 salons demonstrated a wide range of light source brands, bulb wattages, and number of bulbs per device. Higher-wattage sources correlated with higher UV-A irradiance emitted (**Figure**). The energy density delivered per light based on the median UV-A irradiance measured was calculated. Comparing these numbers with 600 kJ/m^2 (60J/cm^2), the energy density shown to cause DNA damage in UV-A–irradiated keratinocytes, we showed that longer exposure times led to increased potential for cutaneous damage (**Table**).[4,6,7]

Discussion | This study revealed 3 important conclusions not addressed in previous publications. First, to our knowledge, random sampling of commercial nail polish drying devices has not been previously performed to determine if a difference in UV-A irradiance exists. We found notable differences in UV-A irradiance values among the 17 drying devices tested. Second, the UV-A irradiance in different areas of potential hand placement within drying devices has not been measured to determine relative homogeneity. This study demonstrated that the irradiance values were not normally distributed within each light device. Specifically, given the varying results when the detector head was placed in 5 different places within the hand-exposure area, it may be assumed that, although not directly measured, the irradiance values were not uniformly distributed over the entire area of potential exposure. Finally, the

Figure. Median Irradiance (UV-A) of a Variety of Nail Polish Drying Devices



Of the 17 light units tested, a wide range of wattages, number of bulbs, and median irradiance values was found. The data indicate a direct correlation between the increasing wattage of the light bulb and the amount of UV-A irradiance emitted.

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Table. Number of Nail Salon Visits and the Risk for DNA Damage[a]

Light Source No.	UV-A Irradiance, Median, mW/cm^2	UV-A Energy Dosage Exposure for Single Visit (8 min) (J/cm^2)[b]	Visits Needed to be Exposed to Threshold Value for DNA Damage, No. (60 J/cm^2)[c]	Months to Attain DNA Damage Threshold, No.[b,d]
1	10.3	5	12	36
2	0.6	0	208	625
3	11.6	6	11	32
4	10.8	5	12	36
5	9.5	5	13	40
6	9.0	4	14	42
7	13.8	7	9	27
8	10.9	5	11	34
9	1.2	1	107	321
10	7.5	4	17	50
11	15.7	8	8	24
12	7.3	3	17	52
13	11.3	5	11	33
14	12.5	6	10	30
15	10.6	5	12	35
16	10.6	5	12	35
17	10.3	5	12	37
Median	10.6	5.1	11.8	35.3
Maximum	15.7	8	208	625
Minimum	0.6	0	8	24

[a] The median UV-A irradiance for each nail polish drying device was used to determine the energy dosage a client would receive per visit. This energy was then compared with the energy known to cause DNA damage to determine the number of visits and months required for a potential risk of carcinogenesis.

[b] See Diffey.[4]

[c] See Greinert et al.[6]

[d] One visit per 3 months.

original publications assumed the UV-A energy exposure from commercial[5] nail polish drying devices would fall within the estimated range determined to be potentially carcinogenic.[1,2,4] However, considering the low UV-A energy exposure in an average manicure visit, multiple visits would be required to reach the threshold for potential DNA damage. Although the in vivo risk from multiple manicure visits remains untested, our data suggest that, even with numerous exposures, the risk for carcinogenesis remains small. That said, we concur with previous authors in recommending use of physical blocking sunscreens or UV-A protective gloves to limit the risk of carcinogenesis and photoaging.

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Accepted for Publication: September 22, 2013

Published Online: April 30, 2014. doi:10.1001/jamadermatol.2013.8740.

Author Contributions: Dr Shipp had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.
Study concept and design: Shipp, Warner, Davis.
Acquisition, analysis, or interpretation of data: Shipp, Warner, Rueggeberg.
Drafting of the manuscript: Shipp, Warner, Rueggeberg.
Critical revision of the manuscript for important intellectual content: Shipp, Rueggeberg, Davis.
Statistical analysis: Warner, Rueggeberg.
Administrative, technical, or material support: All authors.
Study supervision: Davis.

Conflict of Interest Disclosures: None reported.

Correction: This article was corrected online June 19, 2014, for errors in the Table.

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Alemtuzumab Therapy for Leukemic Cutaneous T-Cell Lymphoma: Diffuse Erythema as a Positive Predictor of Complete Remission

Low-dose alemtuzumab (LDA) therapy is highly effective and generally well tolerated for refractory cutaneous T-cell lymphoma (CTCL) with peripheral blood disease.[1] Treatment with LDA is effective in patients with blood involvement (leukemic

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