

# Hampton University Skin of Color Research Institute Symposium 2011: “From Bench to Bedside: Future Directions” Abstracts

## MELANIN AND NICOTINE DEPENDENCE: THE ROLE OF TANNING CAPACITY

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Facultative melanin, or “tan,” is induced by ultraviolet radiation, hormones, or disease. In our previous study, facultative melanin was significantly and positively related to average number of cigarettes per day (CPD), the Fagerström Test of Nicotine Dependence and cotinine. The objective of this study was to investigate a hypothesized association between tanning capacity with nicotine dependence markers CPD and time to first cigarette (TTFC).

Data were collected from 147 adult African American current daily smokers in Harrisburg, PA, USA. We used a spectrometer to measure constitutive and facultative melanin in the subjects' upper arms and foreheads, respectively. Pennsylvania State University Office of Research Compliance approved the study. We selected two reliable markers of nicotine dependence and predictors of cessation success: TTFC and CPD. TTFC was recoded into two groups for two separate analyses: 1) within the first 5 minutes versus after more than five minutes and 2) within the first 30 minutes versus more than 30 minutes. Binary logistic regression multivariate linear regression analyses were employed to examine the relationship between TTFC and CPD and tanning capacity.

The mean M index for facultative melanin was higher (67.8, SD=13.5) than constitutive melanin (55.8, SD=10.1) and the tanning capacity mean M index was 12.0 (SD=7.5). Multivariate logistic regression analysis showed that tanning capacity was significantly and positively related (OR=1.14, 95% CI=1.05-1.22) to TTFC within the first 5 minutes of awakening. In another model predicting first daily cigarette within the first 30 minutes of awakening, tanning capacity was significantly related to TTFC (OR=1.13, CI=1.03-1.23).

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REPORTING, REPRESENTATION, AND SUB-GROUP ANALYSIS OF RACE AND ETHNICITY IN PUBLISHED CLINICAL TRIALS OF ATOPIC DERMATITIS IN THE UNITED STATES BETWEEN 2000-2009

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**Purpose of Study:** To review the literature of atopic dermatitis (AD) clinical trials published in the United States (US) between the years of 2000-2009 and 1) examine the representation of racial and ethnic minorities in those trials; 2) and determine whether investigators reported on demographic variables and performed a sub analysis. **Methods Used:** A Pubmed search was performed to include clinical trials for prevention, treatment, or management of AD published between 2000-2009. Analysis was performed by three independent reviewers. Data recorded for each article included country of origin, publication year, study design, treatment/management type, subject number, subject age range, and sponsorship. Data was collected for reporting of race/ethnicity, socioeconomic status (SES), gender, and incorporation of the demographic data in the analysis and result interpretations. **Summary of Results:** Of 645 Pubmed articles, 402 were reviewed. Of these, 363 articles best fit our search criteria and were included in the analysis. Seventy-eight of the 363 articles originated in the US. Of these articles, 81.0% reported gender, 59.5% included reports of race/ethnicity, and 1.3% reported SES. Within these studies, 10.3% mentioned demographics in their results interpretation and none mentioned possible clinical implications. Only two studies documented the method by which race/ethnicity was assigned (self vs. investigator reported). Of the studies reporting race/ethnicity, the subject population included 62.1% White/Caucasian, 18.0% Black/African American, 6.8% “Other,” 6.9% Asian/Oriental, 3.8% “Non-White”, and 2.0% Hispanic. **Conclusions Reached:** Race and ethnicity are commonly used variables in biomedical research. Researchers studying health disparities believe that ignoring an individual’s racial/ethnic background has extensive downstream ramifications on: 1) understanding contributors of disease; 2) determining racial/ethnic variations in disease presentation, response to therapy, or outcomes; 3) and determining whether biology differs between or within racial and ethnic groups. Given evidence supporting a link between AD with race/ethnicity, SES/environmental factors, it is surprising that in the US they are rarely used in the analysis of outcomes. Accurate reporting of data on race/ethnicity and subgroup analysis is important for determining the generalization of the clinical trial results to all populations. Our study supports the need for improved reporting and subgroup analyses in AD.

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#### STRATEGIES TO ADDRESS VULNERABLE POPULATIONS: THE EXAMPLE OF ALBINISM IN AFRICA

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*Introduction:* Oculocutaneous albinism (OCA) is much more common in certain parts of Africa than elsewhere in the world; however, there are limited statistics regarding prevalence in the current literature. The prevalence of OCA is about 1 in 1429 in Tanzania, 1 in 4182 in Zimbabwe, and 1 in 4000 in South Africa, which is strikingly disparate from the prevalence rates in the United States and globally - 1 in 37,000 and 1 in 20,000, respectively. Therefore, the albino population in Africa represents an incredibly vulnerable population and demands international attention.

*Humans Rights Violations Against Persons with Albinism:* The practice of using albino body parts for witchcraft in order to cure diseases or confer the recipient with magical powers to make them rich or lucky has been reported throughout sub-Saharan Africa, particularly in Tanzania and the Democratic Republic of the Congo. \$75,000 USD can be charged for the procurement of albino arms, legs, ears, and genitals. Children are not immune from these atrocities, as a case of a 7-month-old albino child being brutally murdered with a machete has been reported. In addition, it has been reported that albinos may be raped under the premise that their white skin can cure HIV or other sexually transmitted diseases. These human rights violations against albinos are not uncommon, and increased international recognition and awareness is necessary and merited.

*Recommendations:* The law is limited in how much influence it has on its citizens. Education campaigns, such as “Albinism Awareness Day” in Malawi or the “Albinism in Southern Africa” project should be conducted throughout Africa and internationally in order to promote the rights of persons with albinism. Subsequently, a holistic approach to terminating these atrocities against individuals with albinism will be achieved, and can serve as precedence for other vulnerable populations.

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## ORAL AND ACRAL MACULES

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Hyperpigmentation of the oral mucosa is rare, and when a patient presents with numerous oral lentigines, many clinicians are most concerned with the diagnosis of Peutz-Jeghers syndrome. This poster will be a case report describing a classic case of Laugier-Hunziker syndrome, a completely benign cause of adult-onset mucocutaneous hyperpigmentation. Pictures of the oral mucosal macules will be displayed as well as accompanying histopathologic images with appropriate description. The differential diagnosis of hyperpigmented oral macules is presented as well as the best treatment and management for this disease. Recollection of this rare syndrome can help prevent misdiagnosis of Peutz-Jeghers syndrome and avoid potential complications that could be encountered if aggressive cancer screening was erroneously undertaken.

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## TREATMENT OF KELOIDS WITH TOPICAL APPLICATION OF RAPAMYCIN

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*Purpose:* No entirely satisfactory method of treatment exists for keloids. The mammalian target of rapamycin (mTOR) is a serine/threonine kinase that is a regulator of collagen expression, and its inhibition induces a decrease in extracellular matrix deposition. In past studies, tissue extracts obtained from keloid scars demonstrated elevated expression of mTOR. Application of rapamycin to monoculture keloid fibroblasts downregulated the expression of collagen, demonstrating the anti-proliferative effect and therapeutic potential of rapamycin in the treatment of keloid scars. The purpose of this study was to evaluate the clinical response to topical application of oral rapamycin in patients with keloids. *Methods:* Four patients (ages 27-68 ) with seven keloids of the scalp, cheek, and chest were analyzed. These keloids were complicated by several failed surgeries, pain and pruritis. Oral rapamycin (1mg/ml) was applied to the keloids once a day. *Results:* Examination after 2 months of topical rapamycin therapy showed that in 3 out of 4 patients, the keloids were somewhat flattened, and there was a significant decrease in pain. Side effects included slight irritation relieved with vaseline. Serum rapamycin level in 1 patient was <2 ng/ml (undetectable; reference range 4-20 ng/mL). *Conclusion:* Topical rapamycin appears to be a safe and effective treatment for symptomatic keloids. The treatment appears to be well tolerated with no evident local or systemic adverse effects. Though further studies are needed, rapamycin may be considered for keloid patients who have failed surgery or are not surgical candidates and have reached maximum medical benefit.

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## ASSESSING AND IMPROVING PATIENT KNOWLEDGE ABOUT KELOIDS

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*Purpose:* To determine the effect of prior Internet research to find keloid-related information (KRI) as well as an educational intervention on subject understanding of keloid prevention and treatment.

*Methods:* Adult subjects (n=40) with a clinical diagnosis of keloid scar were recruited from Northwestern University’s dermatology clinic and from the general public by local advertising. Subjects completed a questionnaire that collected information on history of keloid scarring and Internet use to find KRI. Subjects also completed a 19-item questionnaire to assess knowledge about keloid scars at three time points: pre-intervention (PR-I), post-intervention (PO-I), and 3-month phone follow up (3MF). A 5- minute lecture (“educational intervention”), delivered between PR-I and PO-I assessments, provided lay language information about keloid scars. Student’s t-test was used to compare assessment performance between the three time points.

*Results:* Forty subjects participated in the PR-I and PO-I, and 55% of subjects reported prior Internet research to find KRI. Performance, measured as percentage of questions correct, improved from 69% to 96% (p<0.001) between PR-I and PO-I. At PO-I, 75% and 80% of subjects reported being less likely than at PR-I to obtain new tattoos or piercings, respectively. Sixty-five percent of eligible subjects completed the 3MF assessment and mean performance was 87%, an 18% increase (p<0.001) from PR-I.

*Conclusion:* The Internet is a resource utilized by many keloid-prone individuals. Additionally, a short educational intervention enhances understanding in keloid patients and discourages patients from obtaining tattoos and piercings, behaviors known to carry a risk of keloid scar formation.

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MYCETOMA: EPIDEMIOLOGICAL, CLINICAL, MICROBIOLOGY FINDINGS AND TREATMENT AT DAKAR

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*Introduction:* Mycetoma are chronic suppurative and/or granulomatous inflammatory lesion of skin, subcutaneous tissue, fascia, and tendons which are caused by the traumatic inoculation of either fungal (eumycotic) or bacterial (actinomycotic) organisms present in the soil. Mycetomas are endemic in desertic area of West-Africa. Our aim was to describe the epidemiological, clinical, laboratory findings, therapeutical aspects of Mycetoma seen in two dermatologic units at Dakar. *Patients and Methods:* It was a retrospective study concerning all cases of Mycetoma seen during 2010 in two dermatological units at Dakar the capital of Senegal. Data were collected by a question nary. Results: 13 cases were collected, the sex –ratio is 3.3 and the mean age: 41, 85 years (24-70), all patients were farmer. The fustilization was found in all cases; the *Clinical aspects were the followings:* inflammatory tumefaction, tumoral, nodular and super infected. The localization are podal (n=10)). The color of the grains is white (n=3), blacks (n=3) and red (n=5 ±1). The Laboratory findings showed at the mycology's exam: *Madurella mycetomatis* (n=1), *Actinomyadura pelletieri* (n=1). The treatment for Actinomycosis was oral antibiotic (cotrimoxazole alone or in association). For fungal Mycetoma the treatment was surgery (n=3) or oral terbinafine (n=1). *Discussion:* A few patients with Mycetoma can access to the sanitary structures because Mycetoma occurs in rural inhabitants with a low socio-economic level. The diagnosis is based on clinical aspects; confirmation is possible by anatomopathology exam. The differential diagnosis is Kaposi sarcoma, squamous cell carcinoma or melanoma. The treatment in the majority of cases is the surgery by amputation.

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USE OF EpiSkin AS A 3-D IN-VITRO MODEL TO DETERMINE DIFFERENTIAL SCALP DISCOMFORT AFTER RELAXER EXPOSURE: A COMPARISON OF RELAXER TECHNOLOGIES

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Differences in perceived sensory scalp discomfort between guanidine carbonate/calcium hydroxide (no-lye) and sodium hydroxide (lye) relaxer technologies have been reported by users for decades. However, the biochemical processes responsible for the perceived differences have not been fully studied. We used an in vitro 3-D skin model with well developed epidermis to explore the expression of cytokines that may partially explain the biological response resulting in differences in sensory perceptions. EpiSkin® tissues were exposed to lye or no-lye relaxers and washed thoroughly with PBS. Tissues were placed in fresh media and incubated for 4, 24 and 48 hours post treatment. Media was extracted from tissue and the expression of PGE<sub>2</sub>, IL-1 $\alpha$ , and IL-1ra was determined. We show that lye relaxer induced over 350% increase in PGE<sub>2</sub> expression over untreated control compared to 200% by no-lye in the early phase (4h) of epidermal response. Expression of IL-1 $\alpha$  in the early phase showed no significant difference between lye and no lye however, no lye induced higher levels ( $p < .0001$ ) in 24 and 48 hours. Concomitantly, no-lye induced increased expression of IL-1ra compared to lye at all time points.

Given the association of PGE<sub>2</sub> with nociceptive activation, these findings suggest that the perceived variation in sensory discomfort between lye and no lye relaxer may be associated with differences in induced PGE<sub>2</sub> expression.

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SYSTEMIC SCLEROSIS: CLINICAL ASPECTS IN SENEGALESE BLACKS PATIENTS.

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*Introduction:* Systemic sclerosis is an auto-immune disease which involves conjunctival tissue and arterioles, microcirculation with vascular obliteration. Our aim was to describe the epidemiological and clinical features of systemic sclerosis in blacks patients with Sc.S at Dakar.

*Patients and Methods:* We have done a prospective descriptive study in two dermatologic units at Dakar during 12 months (1st April- 2009 to 31 March 2010). The diagnosis of Sc.S was based on ACR's criterion. Results: We collected data from 39 patients. The mean age was 41, 18 years  $\pm$  11, 24 and the sex ratio 0, 39. The medical past story was foetal lost in 48% of cases. The consultation was motivated by hypochromia macules with speckled achromia in all patients, cutaneous sclerosis in 92%. Raynaud phenomenon was found in 97% of cases, the co morbidity was high blood pressure in 18%, and oral contraceptives were taken by oestro-progestatives in 18% of patients. The treatment was oral route corticosteroids in 100% of cases with D pénicillamine and calcium inhibitors in 77% of cases; aspirin was used by 8% of patients.

*Conclusion :* The systemic sclerosis is Common in young adult female, the more Common clinical features in patients with black skin are hypo chromic macula with speckled achromia. The differential diagnosis are: onchocerciasis ,Vitiligo chronic pruritus.