

Original Research Article

Niacinamide and sea daffodils-based bright healthy radiance product range for dark spots: a survey of Indian dermatologists' views and patient insights

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Received: 28 July 2024

Accepted: 12 August 2024

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ABSTRACT

Background: Niacinamide has demonstrated its ability to treat dark spots in various studies. The present study evaluated the perspectives and experiences of healthcare professionals (HCPs) and patients with the niacinamide and sea daffodils-based bright healthy radiance product range for dark spots.

Methods: This study was part of a survey series focusing on various dermatology products across India. The study involved over 1000 registered HCPs including dermatologists, pediatricians, and cosmetologists nationwide. A total of 203 HCPs participated in the survey on the niacinamide and sea daffodils-based product range. A well-structured questionnaire with 15 questions was used to collect the data and the responses were recorded by the HCPs.

Results: Out of the total of 1086 individuals who participated in the survey, majority were females (774, 71.2%). Most HCPs reported that nearly 15-30% of their patients present with dark spots. A vast majority of individuals reported extreme satisfaction with the use of niacinamide and sea daffodils-based bright healthy radiance product range (493, 45.5%) and rated its effectiveness as excellent (511, 47.2%). HCPs reported that most patients showed major improvement in skin brightness (529, 48.7%), while the rest of them (418, 38.4%; 137, 12.6%) experienced good and satisfactory improvement respectively. Importantly, an even skin tone was achieved in most of the patients (492, 45.8%) after the application of the product range.

Conclusions: A personalized approach of using niacinamide and sea daffodil-based products according to the patient's skin types and skin conditions is essential to remove blemishes and dark spots and improve skin brightness.

Keywords: Hyperpigmentation, Dark spots, Niacinamide, Sea daffodil, Skin radiance

INTRODUCTION

Skin colour is the most noticeable example of human diversity, controlled by variations in melanin content. Melanin is a pigment responsible for skin and hair colour that protects the skin from harmful ultraviolet radiation. In case of extreme sun exposure, body starts producing excessive melanin to protect skin from ultraviolet rays.

This overproduction of melanin causes dark patches/areas on skin, which is known as hyper-pigmentation.

Hyperpigmentation is one of the major dermatological concerns in people with all skin types causing emotional and psychological stress. There are 3 main types of hyperpigmentation-solar lentigo (age spots or dark spots), melasma and post-inflammatory hyperpigmentation (PIH).^{1,2} Solar lentigo or lentiginos are pigmented spots (black, brown, gray, red/pink) on sun-exposed skin, often

seen in people who spend a lot of time in sunlight. Besides UV exposure, factors like environmental changes, pregnancy, light skin, cosmetics, certain drugs, and modern lifestyle can cause these dark spots.³⁻⁵ Melasma is a chronic condition with tan, dark/ gray-brown patches on face, especially on cheeks, forehead, and upper lip, often appearing in sun-exposed areas and having irregular borders. PIH caused by various inflammatory processes, either endogenous (like atopic dermatitis, acne, psoriasis, razor bumps)/ exogenous (like insect bites, laser procedures, chemical peels, drug sensitization). It appears as macules/ patches, commonly on sun-exposed areas such as face, shoulders, and trunk.¹

Intensity and colour of these black spots is directly related to the number of active melanocyte syntheses, the size of melanosomes, and their percentage in keratinocytes. Topical medications and surgical procedures are common treatments for dark spots. While bleaching creams can cause severe side effects, some over-the-counter options containing vitamin C, kojic acid, hydroquinone, and glycolic acid are gentler on the skin. Surgical procedures, such as chemical peels, dermabrasion, and cryosurgery, can effectively remove dark spots but come with risks of complications and side effects.⁶ Treatment challenges include longer therapy durations and potential for dark spots to recur or relapse, often resulting in unsatisfactory outcomes.^{7,8} Niacinamide and sea daffodils have been incorporated into various skincare products to help reduce hyperpigmentation and improve skin brightness.

Niacinamide enhances the appearance and texture of sensitive skin while lightening the complexion. Research indicates that it inhibits melanosome transfer in cultured cells and reduces dark spots, making it a promising candidate for treating dark or ageing spots.⁸⁻¹⁰ Our survey aimed to gather HCPs' perspectives on niacinamide-based solutions for dark spots and to document patients' experiences with the niacinamide and sea daffodils-based bright healthy radiance product range.

METHODS

Study design and population

This study was part of a survey series focusing on various dermatology products across India, conducted from June to December 2022. Study involved over 1000 registered HCPs including dermatologists, pediatricians, and cosmetologists from across India. Every month, a product-specific survey link was released for these registered doctors, and each doctor could take up to 10 surveys for a maximum of 2 products.

Study tool and its validation

The study employed a well-structured questionnaire with 15 questions to collect data on the product range. It has been provided in the supplementary material.

Data collection

The survey link was rolled out in two phases: phase 1 (August 2022) and phase 2 (November 2022). The HCPs recorded patients' experiences with niacinamide and sea daffodils-based bright healthy radiance product range during these phases.

Sample size

A total of 203 HCPs participated in this survey on the niacinamide and sea daffodils-based bright healthy radiance product range.

Inclusion and exclusion criteria

The inclusion criteria involved HCPs, specifically dermatologists and cosmetologists, registered across India. General practitioners and patients with skin conditions other than hyperpigmentation (acne, rosacea, seborrheic dermatitis, infections etc.), and those currently on prescription skincare medication were excluded from the study.

Statistical analysis

The survey responses were analyzed using Microsoft excel spreadsheet version 2021. The descriptive statistics were calculated using predefined Excel formulas.

RESULTS

Patient demographics and skin characteristics

The patient population was predominantly female (774, 71.2%). HCPs reported that dark spots are fairly common, occurring in nearly 30-60% of the individuals who visit them. The most common site for black spots in majority of patients was face (951, 87.7%), followed by the back (79, 7.2%) and hands (54, 4.9%) (Figure 1).

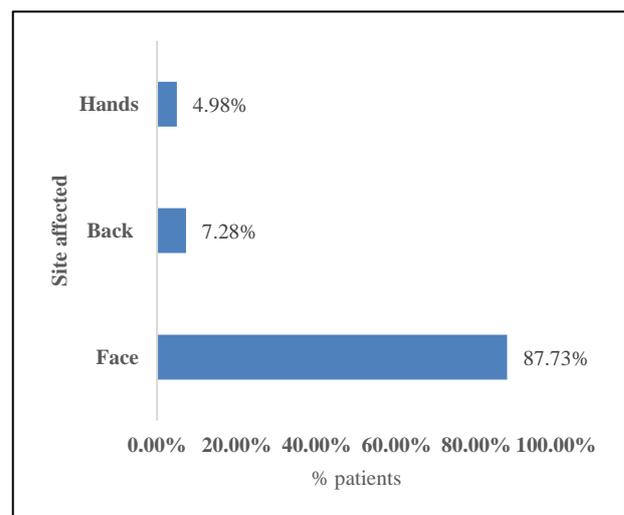


Figure 1: Affected sites with black spots in patients.

Niacinamide/sea daffodils-based solutions: prescription pattern

HCPs mostly prescribed niacinamide/sea daffodils-based solutions to patients with sensitive skin (541, 50%) and uneven skin tone (411, 38%), according to the survey analysis (Figure 2).

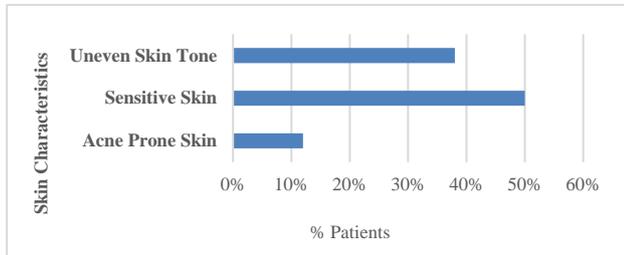


Figure 2: Skin characteristics of patients prescribed with niacinamide/sea daffodils-based solutions.

For the majority of patients with dark spots, HCPs prescribed a bright healthy radiance combination (1021, 94.5%) (Figure 3).

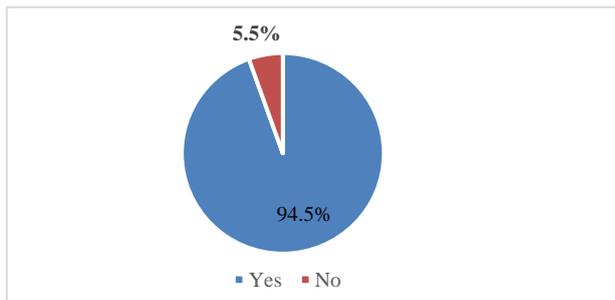


Figure 3: Proportion of patients with dark spots who were prescribed a bright healthy radiance combination by HCPs.

The skincare regimen choice of HCPs for patients with dark spots was also checked through the survey, and a day and night cream combination with cleanser was preferred by doctors for most of the patients (649, 60%) (Figure 4).

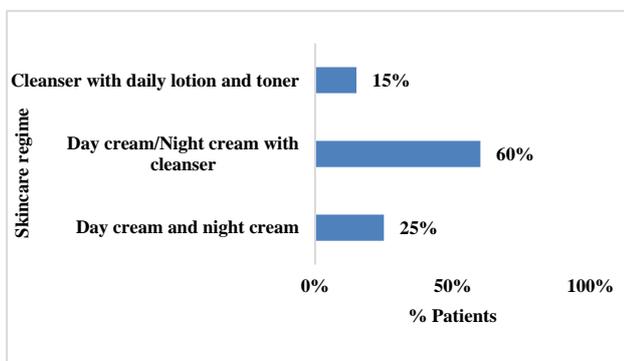


Figure 4: Skin care regime preferred by HCPs for patients with dark spots.

Treatment regimen for dark spots

The ease of incorporation of the treatment regimen in daily life and the time required to get the desired results were also checked through the survey. The survey analysis revealed that a high number of individuals (996, 93%) found it easy to incorporate the prescribed treatment regimen into their daily routine (Figure 5).

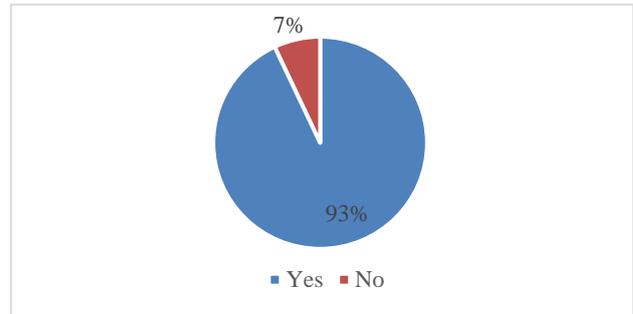


Figure 5: Ease of incorporating the prescribed treatment regimen into daily routines.

According to HCPs, it could take around one to three months to get an even skin tone in most patients with dark spots or pigmentation (485, 44.5%) (Figure 6).

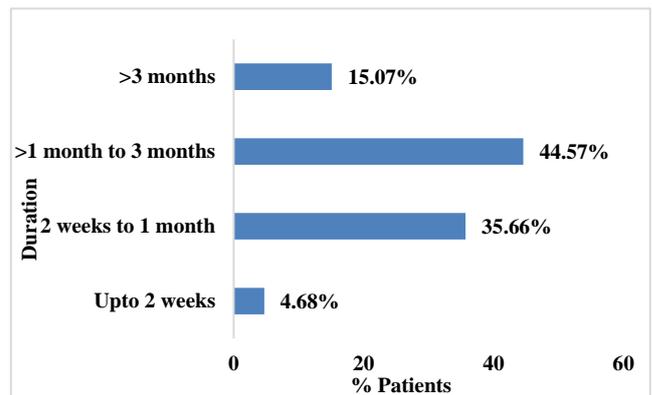


Figure 6: Duration required to achieve even skin tone in patients with dark spots or pigmentation.

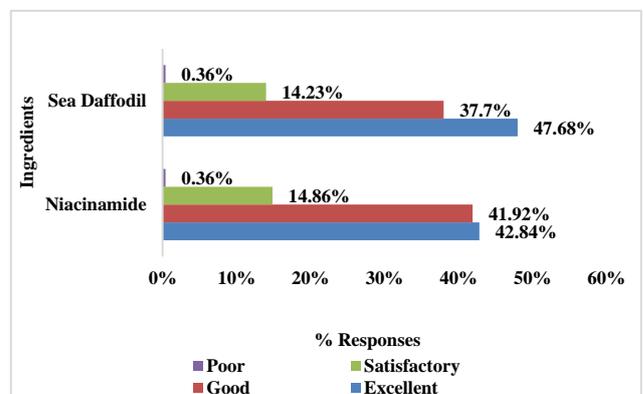


Figure 7: HCPs perception on the effect of niacinamide and sea daffodil to reduce dark spots.

Moreover, most HCPs rated niacinamide and sea daffodil as excellent ingredients for most patients (464, 42.8% and 515, 47.6% respectively) and believed that it is important to include these in products to reduce dark spots (Figure 7).

Patient satisfaction and assessment of niacinamide and sea daffodils-based bright healthy radiance product range

The survey analysis shows that nearly half of the individuals (493, 45.5%) were extremely satisfied with the use of the bright healthy radiance product range and rated its effectiveness against their skin condition as excellent (511, 47.2%) (Figure 8).

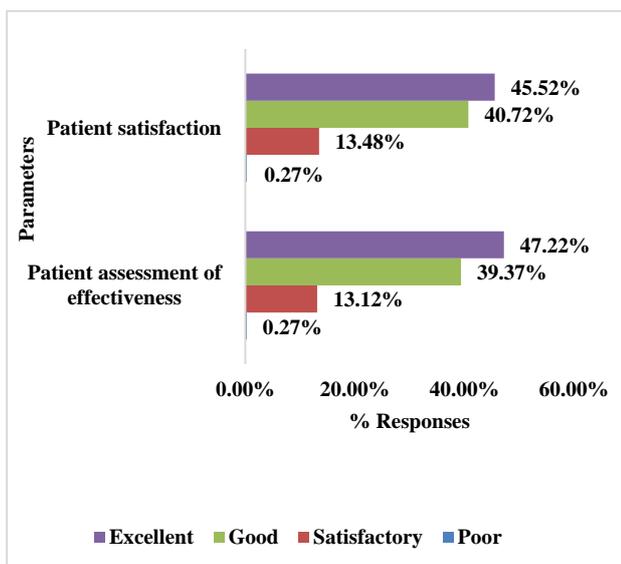


Figure 8: Patient satisfaction and assessment of effectiveness with use of niacinamide and sea daffodils-based bright healthy radiance product range.

HCPs’ assessment of niacinamide and sea daffodils-based bright healthy radiance product range

The efficacy of the niacinamide and sea daffodils-based bright healthy radiance range in improving brightness and skin tone evenness was graded on a scale of excellent, good, satisfactory, and poor in the survey. HCPs reported that skin brightness majorly improved in majority of the patients (529, 48.7%), and many of them (418, 38.4% and 137, 12.6%) experienced good and satisfactory improvement in skin brightness respectively after the application of the product range. Improvement in skin tone was observed in a considerable number of individuals using the products (492, 45.8%) (Figure 9).

HCPs also rated the effectiveness of the products as excellent in most of the individuals (518, 48%) based on clinical assessment (Figure 10).

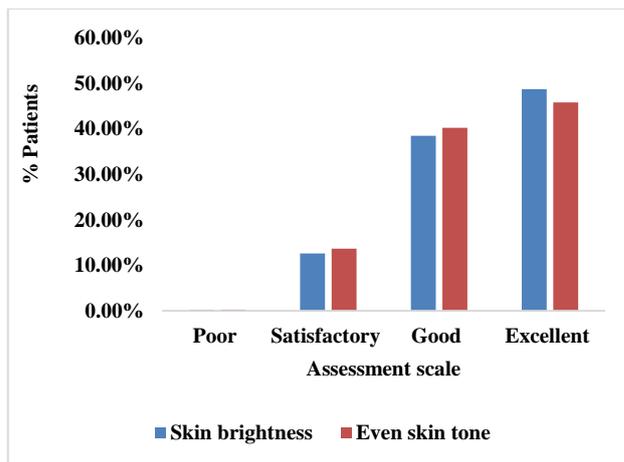


Figure 9: Assessment of the efficacy of the niacinamide and sea daffodils-based bright healthy radiance range by HCPs.



Figure 10: Effectiveness of the products based on clinical assessment by HCPs.

DISCUSSION

Dark spots, or solar lentigines, commonly appear with repeated exposure to ultraviolet radiation, environmental pollution, and aging, affecting around 90% of individuals over 50 years old, particularly those with fair skin.¹¹ Topical niacinamide and sea daffodils (an extract from *Pancreatum maritimum*) address hyperpigmentation issues such as melasma and dark spots by inhibiting melanogenesis, which reduces skin pigmentation. Additionally, niacinamide boosts the production of skin ceramides and other stratum corneum lipids, enhancing the epidermal barrier function to protect the skin.^{12,13} This is why niacinamide is a key ingredient in cosmetics for treating hyperpigmentation and dark spots.¹⁴

The present survey indicates that niacinamide-based solutions are effective for brightening the skin, reducing dark spots, and improving the skin tone. Similarly, a short-term study by Navarette-Solis et al reported that

reduced melanosome transfer, along with photoprotective and anti-inflammatory effects, might be responsible for a reduction of hyperpigmentation with niacinamide treatment. HCPs in our survey revealed that niacinamide showed a reduction in dark spots and helped achieved an even skin tone in their patients within one to 3 months. This duration of reduction in dark spots and hyperpigmentation aligns with that shown by Navarrete-Solis et al in which a significant reduction was observed in the amount of epidermal stained melanin at the end of eight weeks, based on digital analysis of biopsy images.¹² The mechanism by which niacinamide brings about these changes in the skin has been extensively studied. It mainly promotes collagen synthesis, augments the skin barrier properties by upregulating the synthesis of ceramides. It inhibits melanosome transfer to keratinocytes, which helps brighten the skin and further evens out the skin tone.¹⁵ Moreover, it stimulates the synthesis of basal keratinocyte and other intermediates, essential for the formation of a healthy stratum corneum.¹⁵

Sea daffodils were also rated as excellent by most HCPs for reducing dark spots and hyperpigmentation in the current survey. A study examining the efficacy of sea daffodils for pigmented spots revealed that these inhibit melanin synthesis by acting on the substance P receptor present on melanocyte dendrites. These affect both neural and cellular stress pathways of melanin synthesis, ultimately providing an effective solution for dark spots.¹⁶

Consistently following a comprehensive skincare regimen can significantly reduce age spots or dark spots. The current study revealed that HCPs recommend a complete regimen, including day and night creams along with a cleanser, to combat hyperpigmentation, dark spots, uneven skin tone, and dullness. Most HCPs rated niacinamide and sea daffodils as extremely important ingredients in cosmetic formulations to treat hyperpigmentation and dark spots. Likewise, studies suggest that combining niacinamide with other plant actives helps control hyperpigmentation and skin aging.¹⁷

CONCLUSION

Repeated exposure to sunlight (primarily ultraviolet radiation) and environmental factors can damage the skin, leading to hyperpigmentation and dark spots. This damage can be mitigated by using agents like niacinamide and sea daffodils. These ingredients help reduce dark spots and skin discoloration through various mechanisms.

Based on this survey-based study, it was noted that adopting a personalized approach with niacinamide and sea daffodil-based products tailored to individual skin types and conditions can effectively address common skin concerns such as blemishes and dark spots. HCPs

regarded these components as essential in cosmetic formulations for enhancing skin tone and brightness.

Funding: The study was funded by Galderma

Conflict of interest: Dyotona Sen and Sanjay Choudhary are employees of Galderma. Other authors do not declare any conflict of interest

Ethical approval: Not required

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Cite this article as: Swetha P, Seelamsetty K, Bhattacharjee R, Sen D, Choudhary S. Niacinamide and sea daffodils-based bright healthy radiance product range for dark spots: a survey of Indian dermatologists' views and patient insights. *Int J Res Dermatol* 2024;10:238-43.