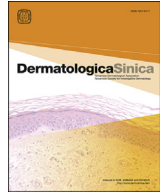


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Dermatologica Sinica

journal homepage: <http://www.derm-sinica.com>

ORIGINAL ARTICLE

Is dermatological lilac really lilac?

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ARTICLE INFO

Article history:

Received: Mar 8, 2017

Revised: Aug 23, 2017

Accepted: Aug 30, 2017

Keywords:

Color perception

Dermatology

Erythema

Medical illustrations

Visual perception

ABSTRACT

Background/Objective: Dermatologists use the word lilac to describe a shade of erythema; especially in lichen planus, morphea, and dermatomyositis. The aim of this study to determine whether or not there is a color really consistent with a lilac color, when they perceive it.

Methods: Four illustrations were prepared for each of these three diseases. Only one illustration of each of the diseases had a color really consistent with a lilac color. Seventy-two physicians working in dermatology (16 residents, 20 teaching staffs, and 36 non-academician specialists) were included in this study. They were asked to choose the most representative illustration for each of the diseases.

Results: Only a few physicians chose illustrations having a color really consistent with a lilac color. In most commonly chosen illustrations, there was a rose or even a salmon color in the area perceived as having a lilac color by the physicians.

Conclusion: Our results might be explained by the color contrast phenomenon. In other words, a human may discern a verging towards lilac from an object not colored such by comparing its color to that of its background, so he may perceive this color.

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Introduction

Mauve, lilac and heliotrope are names of flowers that are also used to indicate some special colors. These names are not infrequently used in dermatological texts in the sense of shades of red. The color of papules of lichen planus is qualified with the word “mauve”.¹ The purplish red halos surrounding early plaques of morphea are called “lilac rings”.² For dermatomyositis, the term “lilac disease” is used because of the color of its erythema especially on the eyelids, the cheeks and the anterior neck triangle.³ This erythema, which is a hallmark sign of the disease, is called “heliotrope rash”.⁴ Recently, it has been emphasized that this naming is due to the similarity between the hue of the periorbital rash of dermatomyositis and that of the petals of the flower, not because of the literal meaning of the word heliotrope, namely “turning towards the sun”.⁵

The color lilac has been placed in various color-name dictionaries, for example “Pourpre”⁶ and “Inter-Society Color Council-National Bureau of Standards (NBS-ISCC)”.⁷ Although lilacs in

different dictionaries are not exactly the same, most of them have a common characteristic: In the standard RGB color space, the order of colors from highest to lowest values is “blue, red, and green (B>R>G)”. A similar criterion is also valid for the colors mauve and heliotrope.

The aim of this study is trying to find an answer for the following question: When dermatologists perceive a lilac, mauve, or heliotrope tone from an area of a skin lesion, is the aforementioned criterion fulfilled? Namely, does the color of this area show the highest value for blue, the moderate value for red, and the lowest value for green in the standard RGB color space?

Methods

Digital illustrations were created to simulate papules of lichen planus, early plaques of morphea, and heliotrope rashes of dermatomyositis (Fig. 1). Four illustrations were prepared for each of these diseases. In all illustrations, the normal skin was represented with the same color, in which red, green, and blue values were 250, 200, and 150, respectively, in the standard RGB color space. Red, green, and blue values of the area of a given disease in all twelve illustrations were given in Table 1. Only the first illustrations had an area, in which the descending order of colors was “blue, red, and green (B>R>G)”. In the illustrations of morphea, this area was

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<http://dx.doi.org/10.1016/j.dsi.2017.08.007>

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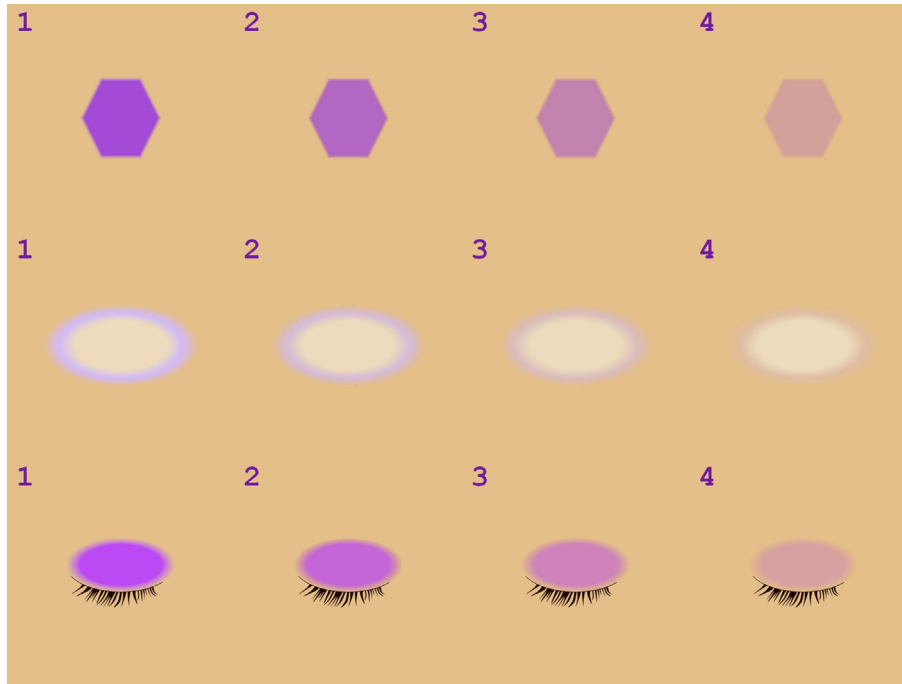


Fig. 1 Digital illustrations for papules of lichen planus (*upper row*), early plaques of morphea (*middle row*), and heliotrope rashes of dermatomyositis (*lower row*). Non-transparent objects representing lesional areas and having a lilac color were mounted on the background with a skin tone, so the shapes in the first column were obtained. Then, transparencies of 25%, 50% and 75% respectively were given to these objects in order to obtain shapes in the second, third and fourth columns.

Table 1 The standard RGB and HSB color values of the questioned area for each illustration and the number of physicians who chose a given illustration.

Disease	No. of the illustration	Of the questioned area							No. of physicians who chose this illustration
		sRGB values				HSB values ^a			
		Red	Green	Blue	The order of colors	H	S	B	
Lichen planus	1	200	100	225	B>R>G	288°	56%	88%	2
	2	213	125	207	R>B>G	304°	41%	84%	12
	3	225	150	188	R>B>G	330°	33%	88%	44
	4	237	175	168	R>G>B	6°	29%	93%	14
Morphea	1	225	200	250	B>R>G	270°	20%	98%	2
	2	232	200	225	R>B>G	313°	14%	91%	1
	3	238	200	200	R>B = G	0°	16%	93%	23
	4	243	200	175	R>G>B	22°	28%	95%	46
Dermatomyositis	1	225	100	250	B>R>G	290°	60%	98%	2
	2	232	125	225	R>B>G	304°	46%	91%	6
	3	238	150	200	R>B>G	326°	37%	93%	39
	4	243	175	175	R>B = G	0°	28%	95%	25

^a H = Hue, S = Saturation and B = Brightness.

placed between the normal skin and a lighter central area representing the ivory-white sclerosis. Red, green, and blue values of this central area were 250, 225, and 200, respectively.

Seventy-two physicians were included in the study. Thirty-eight of them were female; and 34, were male. Their minimum, maximum, and average ages were 24, 68, and 42.6 (SD ± 12.8) years, respectively. Of them, sixteen were residents in dermatology; and fifty-six, specialists in dermatology. Twenty dermatologists were teaching staffs.

A short slide presentation was prepared about both the flowers and the colors lilac and heliotrope. It also included clinical images of papules of lichen planus, an early plaque of morphea, and a heliotrope rash of dermatomyositis, showing the color “lilac”. After this presentation, each of the physicians was asked to choose the most representative illustration for each of the three diseases. Each

of the physicians watched the presentation and made his/her choices in a separate session. The same tablet PC was used in all sessions. Its monitor was calibrated by a software before the experiment.

Four teaching staffs and two residents were also asked to examine six clinical pictures with a diagnosis of lichen planus, morphea or lupus erythematosus and to select the most representative area, if they perceived a lilac color in a given picture (Fig. 3). Then, RGB values were measured in these selected areas.

Results

Most frequently, the physicians chose the third illustration of lichen planus; the fourth, of morphea; and the third, of heliotrope rash as the most representative illustrations (Table 1).

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