



## ABSTRACT

Rejuvenation of aging hands is becoming increasingly important to physicians and their patients. While a variety of invasive treatments are available, topical products that improve manifestations of aging hands are needed. In this brief report, the efficacy of a topical product containing urea, lipids, sodium copper chlorophyllin complex, antioxidants, and humectants was assessed in subjects with moderate-to-severe photodamage of the hands.

**KEYWORDS:** Aging hands, hand rejuvenation, photodamage, sodium copper chlorophyllin, urea

# TOPICAL TREATMENT OF AGING HANDS: Brief Report

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**T**RADITIONALLY, TOPICAL SKIN rejuvenating treatments have focused on the face, while other visible parts of the body have largely been neglected. More recently, the aging hand has become an area of increasing interest to aesthetic physicians and their patients. Hands, which are prominently visible to the individual and to those with whom the individual interacts, are important in human interactions and nonverbal communications.<sup>1–3</sup> Hand appearance has been shown to impact perceived age.<sup>4</sup> As such, individuals are becoming increasingly cognizant of the appearance of their hands.

The dorsal parts of the hand are most adversely affected by exposure to ultraviolet (UV) radiation. With aging, dermal collagen, elastin, and glycosaminoglycans are altered, resulting in skin laxity and thinning. Epidermal thinning along with atrophy of subcutaneous fat causes veins, underlying tendons, and bony structures to become more visible in aged skin. Additional clinical manifestations of the aging hand include textural roughness, dyschromia, lentigines, seborrheic and/or actinic keratosis, and wrinkling.<sup>5–8</sup> Traditional treatments to rejuvenate aged hands include lasers, intense light sources, chemical peels, sclerotherapy, dermal fillers/fat augmentation, and topical skin care products.<sup>6–10</sup>

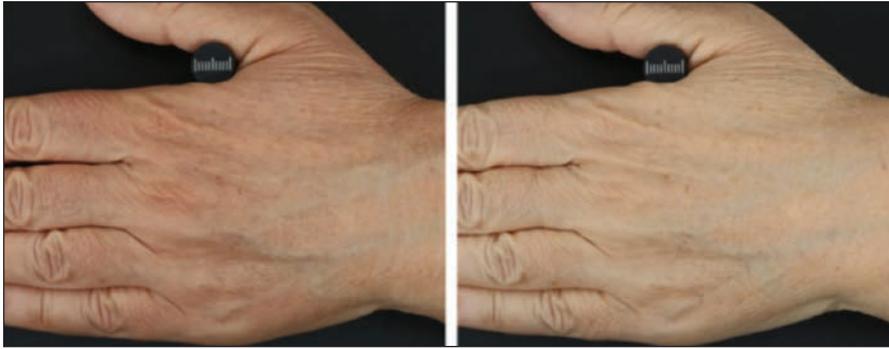
Sodium copper chlorophyllin complex (CHLcu) has been shown to have several therapeutic properties *in vitro*, including antioxidant, anti-inflammatory, and antibacterial properties and inhibition of hyaluronidase.<sup>11–15</sup> In addition, topical application of very low concentrations of this active ingredient (0.025–0.1%) has been shown to have clinically beneficial effects on facial photodamage, redness, enlarged pores, and acne.<sup>16–18</sup> Recently, in a human biopsy study, CHLcu demonstrated the ability to repair photodamaged skin by stimulation of biomarkers in the human extracellular matrix.<sup>19</sup>

A topical formulation of liposomal CHLcu, urea, lipids, antioxidants, and humectants has been developed as a treatment to enhance skin texture, moisturize, and improve skin barrier function and signs of photodamaged skin. The product (Rejuvaphyl® Hand and Neck Complex, MDRejuvena, Inc., Carlsbad, California) was applied twice daily in eight subjects (aged 54–70 years) with moderate to severe photodamage of the hands to assess its ability to reduce signs of photoaging. Treatment was up to 14 weeks depending upon response. The only other product that was used on the hands was a sun protection factor (SPF) 30 sunscreen. The cases in this brief report include both clinical evaluations and

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**FIGURE 1.** Case 1, a 62-year-old woman with moderate photodamage of the hands treated for 5 weeks. Standard view, baseline (left) and at Week 5 (right)



**FIGURE 2.** Case 1—Cross-polarized view (brown channel), baseline (left) and at Week 5 (right)

**TABLE 1.** Case 1

PHOTODAMAGE PARAMETERS	SCORE 0=NONE, 1-3=MILD, 4-6=MODERATE, 7-9=SEVERE	
	BASELINE SCORE	POST-TREATMENT SCORE
Fine lines/wrinkles	5	4
Tactile roughness	5	4
Skin tone unevenness	6	4
Mottled pigmentation	5	4
<b>Global Improvement</b>		
0 = Worse	2 = Mild improvement	4 = Marked improvement
1 = No improvement	✓ 3 = Moderate improvement	

standardized digital photography, and demonstrate a potential novel approach to improving the aesthetics of aging hands.

## CASES

**Case 1.** Case 1 was a 62-year-old woman with moderate photodamage of the hands treated for five weeks (Figures 1 and 2, Table 1).

**Case 2.** Case 2 was a 59-year-old woman with severe photodamage of the hands treated for 12 weeks (Figures 3 and 4, Table 2).

**Case 3.** Case 3 was a 60-year-old woman with moderate photodamage of the hands treated for 12 weeks (Figures 5 and 6, Table 3).

**Case 4.** Case 4 was a 64-year-old woman

with moderate photodamage of the hands treated for 11 weeks (Figures 7 and 8, Table 4).

## DISCUSSION

There has been a huge growth in topical facial rejuvenation treatment products over the past decade. Until recently, however, readily visible areas of the body, other than the face, have been largely neglected. The appearance of the hands, which impacts the perceived age of the individual,<sup>3,4</sup> is becoming an area of increasing interest with physicians and patients alike.

Topical urea has a long history of use in dermatology. It is one of the key components in natural moisturizing factor (NMF) of the stratum corneum.<sup>20</sup> Urea readily decomposes to yield ammonium ions and cyanate, which undergo further conversion to carbon dioxide and ammonia.<sup>21</sup> The hand product formulation utilized in the presented cases employs a stabilized form of urea in high concentrations (hydroxyethyl urea 25%) and a vegetable-derived, skin-identical lipid concentrate featuring a combination of three ceramides (1, 3, and 6), cholesterol, free fatty acids, and phytosphingosine. The formulation also employs a liposomal CHLcu, which has been shown in previous studies to decrease clinical signs of facial photodamage<sup>16</sup> and to repair photoaged skin by stimulating biomarkers in the extracellular matrix.<sup>19</sup>

The cases presented in this brief report show improvements in photodamaged skin on the hands, namely fine lines/wrinkles, tactile roughness, skin tone unevenness, and mottled pigmentation. The skin assessment summary for all eight subjects (Table 5) shows mean improvements in various photodamage parameters. Global improvement (which was based on a combination of photographic assessment and visual clinical evaluation) was rated as moderate improvement for all eight subjects.

## BRIEF REPORT

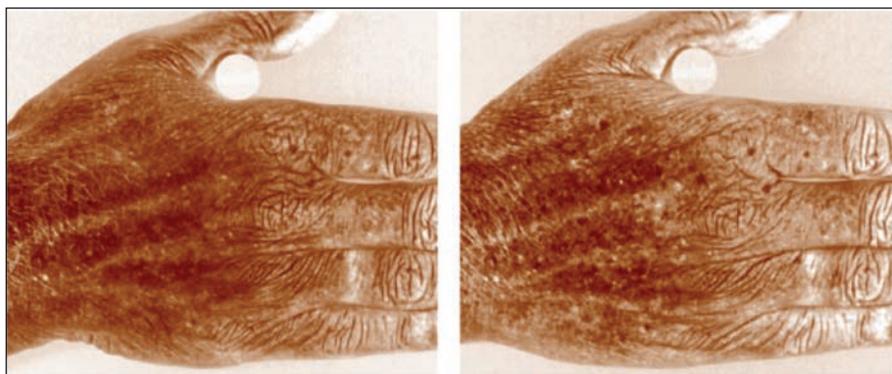
Controlled, randomized studies evaluating the effectiveness of CHLcu combined with urea, lipids, antioxidants, and humectants (Rejuvaphyl® Hand and Neck Complex) in reducing signs of photoaging are needed before meaningful conclusions can be drawn. However, our preliminary results suggest this combination therapy has potential as a rejuvenation treatment.

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**FIGURE 3.** Case 2, a 59-year-old woman with severe photodamage of the hands treated for 12 weeks. Standard view, baseline (left) and at Week 12 (right)



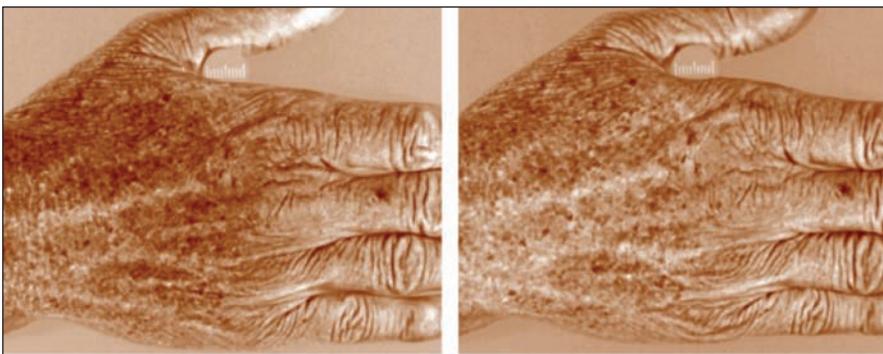
**FIGURE 4.** Case 2. Cross-polarized view (brown channel), baseline (left) and at Week 12 (right)

**TABLE 2.** Case 2

PHOTODAMAGE PARAMETERS	SCORE	
	0=NONE, 1–3=MILD, 4–6=MODERATE, 7–9=SEVERE	
	BASELINE SCORE	POST-TREATMENT SCORE
Fine lines/wrinkles	8	7
Tactile roughness	7	5
Skin tone unevenness	8	6
Mottled pigmentation	8	6
<b>Global Improvement</b>		
0 = Worse	2 = Mild improvement	4 = Marked improvement
1 = No improvement	✓ 3 = Moderate improvement	



**FIGURE 5.** Case 3, a 60-year-old woman with moderate photodamage of the hands treated for 12 weeks. Standard view, baseline (left) and at Week 12 (right)



**FIGURE 6.** Case 3. Cross-polarized view (brown channel), baseline (left) and at Week 12 (right)

**TABLE 3.** Case 3

PHOTODAMAGE PARAMETERS	SCORE 0=NONE, 1-3=MILD, 4-6=MODERATE, 7-9=SEVERE	
	BASELINE SCORE	POST-TREATMENT SCORE
Fine lines/wrinkles	6	5
Tactile roughness	5	4
Skin tone unevenness	6	5
Mottled pigmentation	6	5

**Global Improvement**

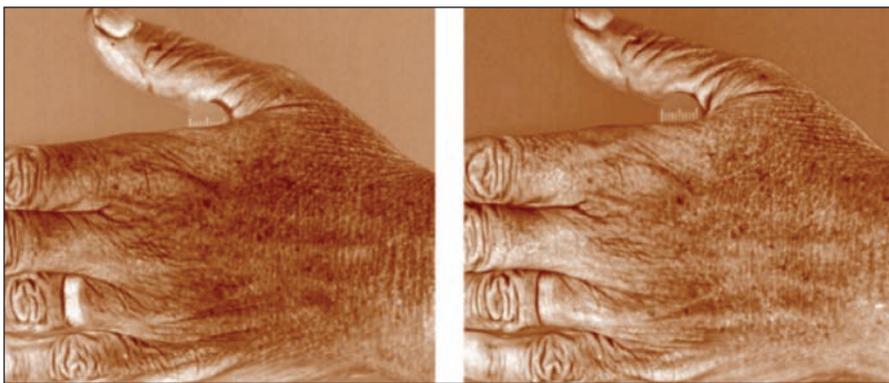
0 = Worse  
1 = No improvement  
2 = Mild improvement  
3 = Moderate improvement ✓  
4 = Marked improvement

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**FIGURE 7.** Case 4, a 64-year-old woman with moderate photodamage of the hands treated for 11 weeks. Standard view, baseline (left) and at Week 11 (right)



**FIGURE 8.** Case 4. Cross-polarized view (brown channel), baseline (left) and at Week 11 (right)

**TABLE 4.** Case 4

PHOTODAMAGE PARAMETERS	SCORE 0=NONE, 1-3=MILD, 4-6=MODERATE, 7-9=SEVERE	
	BASELINE SCORE	POST-TREATMENT SCORE
Fine lines/wrinkles	5	4
Tactile roughness	4	3
Skin tone unevenness	5	3
Mottled pigmentation	5	3
<b>Global Improvement</b>		
0 = Worse	2 = Mild improvement	4 = Marked improvement
1 = No improvement	✓ 3 = Moderate improvement	

**TABLE 5.** Skin assessment summary for all 8 patients

PHOTODAMAGE PARAMETERS	BASELINE (MEAN SCORE)	POST-TREATMENT (MEAN SCORE)	REDUCTION COMPARED TO BASELINE
Fine lines/wrinkles	5.9	4.9	-16.9%
Tactile roughness	5.5	4.3	-21.8%
Skin tone unevenness	6.4	4.9	-23.5%
Mottled pigmentation	6.1	4.0	-34.5%