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EFFICACY OF THE "DƯỠNG NHAN" HERBAL FACIAL MASK IN TREATING MELASMA IN WOMEN AT THE DERMATOLOGY DEPARTMENT – TUE TINH HOSPITAL, 2024

Nguyen Thi Phuong*

Vietnam University of Traditional Medicine - 2 Tran Phu, Mo Lao Ward, Ha Dong Dist, Hanoi City, Vietnam

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ABSTRACT

Objective: To evaluate the efficacy of the "Dưỡng Nhan" herbal facial mask in treating melasma in women at the Dermatology Department – Tue Tinh Hospital in 2024.

Subjects and Methods: This was a clinical interventional study conducted on 30 female patients with melasma at Tue Tinh Hospital from March to August 2024. The therapeutic outcomes of the "Dưỡng Nhan" herbal mask were evaluated based on clinical and paraclinical indicators, as well as assessments of adverse effects.

Results: After 12 weeks of treatment, the mean MASI score significantly decreased from 6.68 to 3.25, with a statistically significant difference ($p < 0.001$), while the L* value (indicating skin brightness) showed a marked increase. Clinically, 86.6% of patients showed good to excellent improvement. The rate of adverse reactions was very low, with only one case (3.3%) experiencing mild irritation, which resolved completely. Notably, 90% of the patients reported satisfaction and felt confident during the treatment process.

Conclusion: The "Dưỡng Nhan" herbal facial mask is a safe and effective therapy for improving skin pigmentation in melasma after 12 weeks of use. This herbal formulation presents high potential for clinical application and offers a new direction in the development of traditional medicine-based skincare products.

Keywords: Treatment outcome, melasma, Tue Tinh Hospital.

1. INTRODUCTION

Melasma is a common pigmentary disorder, particularly prevalent among Asian women of reproductive age. This condition is characterized by brown or grayish-brown patches on the face, which adversely affect both the patient's aesthetics and quality of life. Factors such as UV radiation, hormonal fluctuations, genetics, and inflammation have been identified as being related to the pathogenesis of melasma [1].

Current treatment options include topical creams containing hydroquinone, tretinoin, and azelaic acid, as well as chemical peels, laser therapy, and, more recently, oral and topical tranexamic acid. However, these treatments still have many limitations and are often accompanied by unwanted side effects such as skin irritation, post-inflammatory hyperpigmentation, and high recurrence rates [2].

Against this backdrop, there is growing interest in exploring traditional medicine and herbal-based therapies as alternative treatment options. Recent studies have reported improvements in pigmentation through the use of herbal extracts such as Cuscuta (dodder), Pycnogenol from maritime pine bark, and acupoint embedding techniques in traditional Chinese medicine [3]. Herbal products with mechanisms involving antioxidant, anti-inflammatory, and endocrine-regulating effects have shown potential as safer and more effective treatments for melasma.

However, in Vietnam, clinical studies evaluating the effectiveness of traditional herbal formulations, particularly the "Dưỡng Nhan" facial herbal mask, in melasma treatment remain limited. Therefore, this study was conducted to assess the therapeutic efficacy of the "Dưỡng Nhan" herbal facial mask

*Corresponding author
Email: phuong.nguyen0901@gmail.com **Phone**: (+84) 905566565 **Http**s://doi.org/10.52163/yhc.v66ienglish.2778

in treating melasma in women at the Dermatology Department of Tue Tinh Hospital in 2024.

2. SUBJECTS AND METHODS

2.1. Study Subjects

All patients diagnosed with melasma over the age of 18 who visited and received outpatient treatment at the Dermatology Department – Tue Tinh Hospital from March 2024 to August 2024 were included in this study:

- *Inclusion criteria:* All female patients over 18 years old diagnosed with melasma at the Epidermal (E), Dermal (D), or Mixed (E+D) level who agreed to participate voluntarily.

- *Exclusion criteria:*

+ Genetic pigmentation disorders; patients with adrenal insufficiency (Addison's disease causing generalized hyperpigmentation), thyroid or pituitary disorders.

+ Metabolic: Patients with iron overload-related pigmentation (e.g., hemosiderosis).

+ Nutritional: Patients with chronic malnutrition.

+ Chemical: Occupational melasma due to frequent exposure to petroleum, coal tar, antimalarial drugs, tetracycline, or arsenic compounds.

+ Presence of malignant tumors.

+ Hemochromatosis.

+ Failure to attend follow-up appointments or noncompliance with study protocols.

+ Use of topical agents containing hydroquinone, tretinoin, or steroids, or systemic medications containing vitamin A derivatives (isotretinoin, acitretin) or steroids within the past 6 months.

+ Prior use of chemical peels, microdermabrasion, or laser therapy within the past 9 months.

+ Known allergy to any component of the herbal mask used in the study.

2.2 Study Design

- Design: Open-label clinical intervention study with pre- and post-treatment comparisons.

- Sampling: Convenience sampling was used. All patients who met the inclusion and exclusion criteria during the study period were selected, resulting in 30 participants

*** Research process**

- Study Procedure

Step 1: Before treatment, patients were informed about the study's objectives and significance. Participation was voluntary, and informed consent was obtained before participation.

Step 2: Comprehensive clinical assessments were conducted. Each patient was assigned a medical record (Appendix) and underwent baseline tests, including a Complete Blood Count (CBC – comprising leukocytes, erythrocytes, and platelets), Blood Biochemistry (AST, ALT, Urea, and Creatinine), and CRP. Baseline photographs were taken at T_0 (day 1 of treatment).

Step 3: Treatment according to protocol

Patients washed their faces with clean water at a temperature of 30°C. The herbal mask was applied in a single layer, starting from the center of the lesion and spreading outward toward the edges. The mask was left on the treated area for 20 minutes, then rinsed off with clean water. After the mask application, patients underwent hot steam therapy using a dual-nozzle (hot and cold) steamer. The steaming session lasted 15 minutes. The hot nozzle was positioned approximately 30–40 cm away from the patient's face, adjusted to a comfortable temperature for each individual. Patients' eyes were protected with moist cotton to avoid steam exposure. The mask was applied once daily for 12 consecutive weeks (84 days).

Step 4: Clinical assessment and monitoring of adverse effects at T_4, T_8, and T_{12}

During the treatment, patients were monitored for clinical progress and any adverse effects. At the same time points, the following tests were performed: Complete Blood Count (white blood cells, red blood cells, platelets), blood biochemistry (AST, ALT, urea, creatinine), CRP, and clinical photographs were taken at T_{12} (end of week 12) to evaluate final treatment outcomes.

Step 5: Documentation and data processing

Patient medical records were completed. All collected data were processed and analyzed for statistical reporting and conclusions.

2.3. Study Variables:

- Characteristics of lesion size reduction after 12 weeks of treatment

- Evaluation by MASI score: The MASI (Melasma Area and Severity Index) was developed by Kimbrough Green et al. and is widely applied in the "Guidelines for Clinical Trials in Melasma" to evaluate the severity of melasma [4].

$$MASI = 0.3(D_F+H_F)A_F + 0.3(D_{MR}+H_{MR})A_{MR} + 0.3(D_{ML}+H_{ML})A_{ML} + 0.1(D_C+H_C)A_C$$

The MASI score ranges from 0 to 48, where a score < 5.5 is classified as mild, 5.5 – < 8.7 as moderate, ≥ 8.7 – < 13.1 as severe, and ≥ 13.1 – 48 as very severe. A higher MASI score corresponds to a greater degree of hyperpigmentation.

- Assessment using a Colorimeter for lesion brightness [5]:

The measurement window of the colorimeter device was applied directly onto the target area. After a few seconds, values for L, a, and b indices were displayed. The measurements were taken at the darkest part of the lesion and recorded into the data collection form. These indices reflect changes in skin brightness, with L values ranging from negative (darker) to positive (lighter). Normal skin typically has an L value between 45 and 65. Higher L values correspond to lighter skin tones [4].

- Evaluation of side effects:

Side effects related to the treatment protocol were graded by physicians using a 4-level scale [20]:

1 – Mild (light brown)

2 – Moderate (brown)

3 – Severe (dark brown)

4 – Very severe (black)

Psychological characteristics of patients in response to adverse effects during treatment were also documented.

2.4. Data Analysis

All collected data were cleaned and processed using biomedical statistical methods with the support of IBM SPSS version 26.0.

2.5. Ethical Considerations

This study was approved by the Scientific Committee and the Ethics Committee of the Vietnam Academy of Traditional Medicine and Pharmacy before implementation. Authorization was granted by the Board of Directors of Tue Tinh Hospital to conduct the study at the hospital.

3. RESULT

Through the study conducted on 30 patients with melasma during the research period, we observed the following results:

*** Treatment outcome:**

Table 1. Characteristics of lesion size reduction after 12 weeks of treatment

Evaluation Level	Number of Patients	Percentage (%)
Excellent	7	23.3
Good	19	63.3
Moderate	2	6.7
Minimal	2	6.7
Total	30	100.0

The evaluation of lesion size reduction after treatment showed that 23.3% of cases were rated as excellent, 63.3% as good, 6.7% as moderate, and 6.7% as minimal. The high proportion of patients with exceptional and good outcomes indicates the efficacy of the herbal mask in reducing the area of pigmented lesions over a prolonged treatment period. No cases of new lesion development were observed at any of the follow-up time points: weeks 4, 8, or 12.

Table 2. MASI score over time during treatment

Time Point	Mean ± SD	Min – Max	p-value
Before treatment[1]	6.68 ± 2.05	3.6 – 12.8	–
After 4 weeks[2]	6.64 ± 2.03	3.6 – 12.6	$p^{1-2} = 0.257$
After 8 weeks[3]	5.12 ± 1.59	2.4 – 9.0	$p^{2-3} < 0.001$
After 12 weeks[4]	3.25 ± 1.24	1.2 – 5.4	$p^{3-4} < 0.001$

The mean MASI score decreased from 6.68 ± 2.05 before treatment to 3.25 ± 1.24 after 12 weeks. The reduction was most pronounced between week 8 and week 12, showing a statistically significant difference ($p < 0.001$). These results demonstrate the efficacy of the "Dưỡng Nhan" facial herbal mask in reducing the severity of melasma over time, with the most significant improvement observed during the final treatment phase.

Table 3. Evaluation using a Colorimeter after treatment

Index	Before Treatment	After 4 weeks[2]	After 8 weeks[3]	After 12 weeks[4]
L	70.16 ± 2.66	70.57 ± 2.33	71.68 ± 2.30	72.78 ± 2.06
p-value	–	$p^{1-2} = 0.01$	$p^{2-3} < 0.001$	$p^{3-4} < 0.001$

Index	Before Treatment	After 4 weeks[2]	After 8 weeks[3]	After 12 weeks[4]
a	15.02 ± 1.74	14.62 ± 2.24	13.57 ± 2.24	13.0 ± 2.04
p-value	–	p^{1-2} = 0.323	p^{2-3} = 0.002	p^{3-4} = 0.030
b	20.52 ± 2.19	21.05 ± 2.45	20.96 ± 2.30	22.71 ± 10.28
p-value	–	p^{1-2} = 0.058	p^{2-3} = 0.705	p^{3-4} = 0.306

The Colorimeter measurements of indices L, a, and b showed significant changes after treatment. Specifically, the L index increased from 70.16 ± 2.66 before treatment to 72.78 ± 2.06 after 12 weeks, indicating a visible lightening of the skin. The a index gradually decreased, reflecting a reduction in red pigmentation. Meanwhile, the b index showed no statistically significant change, suggesting that yellow pigmentation remained stable..

*** Assessment of adverse effects during treatment**

Table 4. Adverse reactions observed during treatment (physician evaluation)

Side Effect		
After 4 weeks	After 8 weeks	After 12 weeks
None		
29 (96.7%)	30 (100.0%)	30 (100.0%)
Allergic dermatitis		
1 (3.3%)	0 (0.0%)	0 (0.0%)
Total		
30 (100.0%)	30 (100.0%)	30 (100.0%)

According to physicians' evaluations, 96.7% of patients experienced no adverse effects. Only one patient (3.3%) showed signs of mild allergic dermatitis at week 4. No severe reactions were recorded. No side effects were observed at weeks 8 and 12, indicating that the herbal facial mask is highly safe for long-term clinical use.

Table 5. Psychological responses of patients to adverse effects during treatment

Psychological Response	After 4 weeks	After 8 weeks	After 12 weeks
Satisfied and reassured with treatment	27 (90.0%)	27 (90.0%)	27 (90.0%)
Neutral	1 (3.3%)	1 (3.3%)	1 (3.3%)
Dissatisfied	0 (0.0%)	0 (0.0%)	0 (0.0%)
Felt discomfort or inconvenience during masking	2 (6.7%)	2 (6.7%)	2 (6.7%)

Most patients (90.0%) reported satisfaction and reassurance with the treatment. Only 3.3% felt neutral, and 6.7% experienced some discomfort or inconvenience during the application of the mask. Notably, no participants reported dissatisfaction. These findings reflect the overall acceptability of the treatment method, with a high proportion of patients demonstrating a positive psychological response.

4. DISCUSSION

Melasma can be treated using a variety of methods, including topical medications, oral agents, chemical peels, laser therapy, and cosmetics. Each method has its advantages and disadvantages; however, no single approach has been consistently demonstrated to produce optimal outcomes.

Worldwide and in Vietnam, numerous studies have investigated various treatment modalities for melasma, often reporting promising results, as seen in studies by Lee et al. [6] Conducted a study on 52 patients using low-fluence QS YAG laser combined with chemical peeling (Jessner's solution) for two weeks, resulting in a significant reduction in MASI scores. Nguyen Tien Thanh and Nguyen Van Thuong [7] evaluated quality-of-life improvements in patients treated with QS YAG laser combined with a dual-component product containing 4-N-Butylresorcinol and tranexamic acid. Le Thai Van Thanh [8] studied melasma in pregnant women and reported on several intervention strategies, while Nguyen Van Thuong treated non-pregnant women topically with 2% hydroquinone, 0.05% retinoic acid, and sunscreen [9]. All these studies showed clear therapeutic benefits, influencing not only the aesthetic but also the psychological well-being and quality of life of melasma patients.

However, no studies to date have evaluated the use of traditional herbal facial masks in the treatment of melasma. Our study was conducted to assess the effectiveness of the "Dưỡng Nhan" herbal facial mask for treating melasma in women. This represents a novel approach in the context of Vietnam's efforts to develop traditional medicine and herbal-based products.

*** Clinical efficacy at weeks 4, 8, and 12:**

- Clinical outcome: As shown in Tables 2 and 3, 23.3% of participants were rated as having excellent improvement, 63.3% as good, 6.7% as moderate, and 6.7% as minimal. The high proportion of patients with good to excellent outcomes reflects the effectiveness of the herbal mask in reducing the area of pigmented lesions over a prolonged treatment period. No new lesions were observed throughout follow-up at weeks 4, 8, and 12.

- MASI score characteristics after treatment: Based on the MASI score, the average score decreased from 6.68 ± 2.05 before treatment to 3.25 ± 1.24 after 12 weeks of treatment. This reduction was most notable between week 8 and week 12, with a statistically significant difference ($p < 0.001$). This result demonstrates the effectiveness of the "Dưỡng nhan" facial herbal mask in reducing the severity of melasma throughout treatment, with the most significant improvement observed during the final treatment phase.

- Evaluation using Colorimeter after treatment: The L, a, and b indices measured by the Colorimeter showed significant changes after treatment. Specifically, the L index increased from 70.16 ± 2.66 before treatment to 72.78 ± 2.06 after 12 weeks, indicating that the skin became brighter after treatment. The a index decreased from 15.02 ± 1.74 before treatment to 13.0 ± 2.04 after 12 weeks, showing a reduction in red pigmentation. Meanwhile, the b index did not show statistically significant changes, indicating that yellow pigmentation mainly remained unchanged. To date, there have been no studies, either domestically or internationally, evaluating the effectiveness of herbal facial masks based on both MASI score and Colorimeter measurements in women with melasma, so comparative observations have not yet been made.

According to traditional medicine, melasma is often associated with disorders of qi and blood, internal heat, or weakened organ functions (especially of the spleen, kidneys, and liver). The "Dưỡng nhan" facial mask includes herbs such as Pueraria mirifica, Panax notoginseng, Poria, and Zingiber zerumbet, which have the effects of tonifying blood, regulating qi, strengthening the spleen, and clearing internal heat. Pueraria mirifica nourishes yin, enhances complexion, regulates hormones, and helps brighten the skin. Panax notoginseng activates and tonifies blood, reduces stagnation, and improves circulation to promote a ruddy complexion. Poria strengthens the spleen, promotes urination, and helps eliminate toxin accumulation that causes skin pigmentation. Zingiber zerumbet regulates qi, reduces stagnation, has anti-inflammatory effects, and helps even out skin tone. Thus, the "Dưỡng nhan" facial herbal mask improves qi and blood, clears internal heat, regulates organ functions, enhances blood circulation, balances hormones, and detoxifies the body—thereby supporting effective melasma treatment.

According to modern medicine, melasma (hyperpigmentation) is associated with increased melanin production due to sun exposure, hormonal disorders, oxidative stress, and inflammation. The ingredients in the herbal mask may help as follows:

Pueraria mirifica: Contains phytoestrogens (plant-based hormones) that help balance hormone levels and support melasma reduction caused by hormonal disorders.

Panax notoginseng: Contains saponins and flavonoids that improve blood circulation and have strong antioxidant properties.

Poria: Has anti-inflammatory effects, supports liver and kidney function, aids in detoxification, and improves skin.

Zingiber zerumbet: Possesses antioxidant and anti-inflammatory properties, reducing the effects of free radicals on the skin.

This herbal formulation has the potential to support melasma treatment, reduce inflammation, balance hormones, and protect the skin from oxidative stress.

Evaluating complications during treatment is crucial for determining the safety of the therapeutic method, which is also a significant concern for clinicians. In our study, we monitored for adverse effects by observing skin reactions and combining them with patient interviews after each treatment session. Among the 30 patients, only one patient (3.3%) reported a mild stinging sensation in week 4 (this patient had a history of sensitive skin); however, the symptom completely resolved during subsequent treatments. No complications were observed at weeks 8 and 12 of treatment (see Tables 4 and 5).

5. CONCLUSION

A 2024 study evaluating the effectiveness of the "Dưỡng Nhan" herbal facial mask in treating melasma among 30 female patients at the Dermatology Department of Tue Tinh Hospital demonstrated positive outcomes in terms of clinical efficacy, reduction in MASI score, and improvements in skin brightness, as measured by the Colorimeter. After 12 weeks of treatment, the average MASI score significantly decreased from 6.68 to 3.25 ($p < 0.001$), while the L value (indicating skin brightness) increased markedly. A total of 86.6% of patients were rated as having excellent or good clinical improvement. The incidence of adverse reactions was very low, with only one case (3.3%) experiencing mild irritation, which resolved completely. Notably, 90% of patients reported feeling satisfied and reassured throughout the treatment process.

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