Therapeutic Effects of Topical Herbal Medicine -Rhubarb Ointment on Rosacea

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Study Aims

A review of the literature reveals that clinical studies on topical botanical and traditional Chinese herbal medicine (TCM) for rosacea are limited. A 2012 study published in The Journal of Clinical Pharmacology reported that Quassia extract significantly improved erythema, flushing, papules, and vascular proliferation in rosacea patients. Additionally, a 2005 randomized trial published in the European Academy of Dermatology and Venereology demonstrated that chrysanthemum extract was more effective than the control group in reducing erythema area and severity.

Currently, the optimal treatment for rosacea remains unclear, and research on the therapeutic effects of topical Chinese herbal medicine for rosacea is scarce. According to the Qing Dynasty medical classic Yi Zong Jin Jian, the Diandao San formula, which contain rhubarb is traditionally used to clear heat, eliminate parasites, detoxify, cool the blood, and promote blood circulation, making it suitable for treating conditions such as erythema, acne, and folliculitis, which align with rosacea symptoms.

Recent studies also suggest that combination therapy is beneficial in treating rosacea. Therefore, this study aims to evaluate the efficacy of this TCM herbal formula in the treatment of rosacea.

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Study Design

Patients were enrolled in the study following assessment by dermatologists or traditional Chinese medicine (TCM) practitioners, ensuring they met the inclusion and exclusion criteria.

Inclusion Criteria:

- Patients aged 20 years or older diagnosed with rosacea.
- Willing to sign a written informed consent form and comply with medical guidance.
- No use of any medication for rosacea treatment within the past two weeks.

Exclusion Criteria:

- History of malignant skin tumors at the rosacea-affected site.
- High risk of skin infection at the affected site.
- History of allergic reactions to topical herbal medicines.
- Pregnant individuals.
- Inability to complete study questionnaires or comply with medical instructions.

The study enrolled 24 participants from two sites: Keelung Hospital and Lover's Lake Hospital. Participants were randomly assigned into two groups via computer-generated randomization, with 12 individuals in the experimental group and 12 in the control group. The experimental group received *Diandao San* ointment, while the control group received a placebo ointment with a similar appearance and scent but without therapeutic effects. Both ointments were applied twice daily to clean skin on the affected areas for six weeks. In cases of adverse skin reactions, application was temporarily halted, and the reactions were documented and monitored.

Assessment and Evaluation

Before enrollment, participants underwent evaluations, including Fitzpatrick skin type classification, distribution of rosacea lesions, severity of erythema, papules, and pustules, and quality of life assessments. Adverse skin reactions were also recorded. Follow-up assessments were conducted at weeks 1, 2, 4, and 6 by TCM practitioners, who re-evaluated skin symptoms, quality of life, and adverse reactions.

- **Skin Type:** Assessed using the Fitzpatrick classification scale.
- **Lesion Distribution:** Documented with photographs, noting affected areas such as bilateral cheeks, nose, chin, forehead, and eyes.
- **Severity of Skin Symptoms:** Assessed using the Investigator Global Assessment (IGA) scale.
- **Quality of Life:** Measured using the Dermatology Quality of Life Index (DQoL), evaluating emotional, symptomatic, and lifestyle impacts.

Participants in the experimental group achieving an IGA and DQoL score of 0-1 after six weeks were considered to have significant improvement and did not require further treatment. Those with IGA scores of 2-3 or DQoL scores between 2-10, showing significant improvement compared to baseline, continued using *Diandao San* ointment. Participants with no significant improvement post-trial were referred to dermatologists and TCM practitioners for alternative treatment options. In the control group, participants experiencing severe adverse reactions, allergic responses, or infections were immediately withdrawn from the study and evaluated for further treatment.

Data Analysis

Statistical analysis was performed using SPSS software. Baseline differences were analyzed using ANOVA, while paired t-tests were used to compare pre- and post-treatment data. The study assessed all parameters, including mean values and standard deviations, with a significance level set at $\alpha = 0.05$ (one-tailed).

The analysis uses Robust Linear Mixed-Effect Models (LMMs) due to the violation of normality in outcome measurements. To address this issue, robust LMM was applied to enhance the reliability of estimates by mitigating the effects of outliers or non-normal data distributions.

Additionally, the robustlmm method was used, which down-weights outliers by modifying the loss function, ensuring that extreme observations do not disproportionately influence the fixed effect estimates. This approach increases the robustness of estimation methods, improving the accuracy and stability of the results.