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Experimental Trial on Ginger Plus Lemon Shots

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ABSTRACT

Acne vulgaris is a widespread skin disease that is affected by several factors, such as inflammation, hormonal status, and dietary factors. Natural products like ginger and lemon, which contain anti-inflammatory and antioxidant phytochemicals, have been potential in controlling symptoms of acne. **Objectives:** To examine the impact of the ginger plus lemon shot intervention on the severity of acne and associated hematological parameters in young adult women. **Methods:** This interventional study included 100 female volunteers between 21–24 years of age with mild to moderate acne who were included in a 10-day interventional trial. All volunteers took 100 mL each of fresh ginger and lemon shots once a day. Clinical evaluation by the Global Acne Grading System (GAGS), complete blood count (CBC), and sensory questionnaires were performed before and after the intervention. Dietary consumption and compliance were observed during the study. **Results:** The intervention significantly decreased acne lesions and redness of the skin, backed by hematological improvement. Reduction in white blood cell (WBC) count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels reflected a reduction in systemic inflammation. Sensory evaluation revealed excellent acceptability with scores higher than 4 on a 5-point hedonic scale for taste, aroma, color, and overall acceptability. **Conclusions:** Intake of ginger along with lemon shots on a daily basis for 10 days showed favorable results in alleviating acne symptoms and systemic inflammation markers without any side effects.

INTRODUCTION

Acne vulgaris is a pervasive dermatological condition affecting over 80% of individuals at some point in their lives, posing significant psychological and social challenges, particularly among young adults [1]. Multiple pathogenic mechanisms underlie the pathogenesis of acne, which includes the overproduction of sebum, hyperkeratinization of follicles, the colonization of Cutibacterium acnes, and inflammatory cascades [2]. Although there are traditional medications like retinoids, antibiotics, and hormonal therapy, they are accompanied by various side effects like skin inflammation, systemic complications, and so forth, which prompts the emergence of the desire to find more natural methods of treatment [3].

The last few years have seen much attention being given to the use of herbal and functional foods in dermatology. Around 80 percent of acnes sufferers have stated that they have been using natural or plant-based products in the search of a solution that does not only deal with the underlying causative factors but also has few side effects [4]. Ginger (Zingiber officinale) and lemon (Citrus limon) are among them, and these two have been promising because of broad-spectrum pharmacological activities. Ginger contains bioactive compounds that have a high level of anti-inflammatory, antioxidant, and antimicrobial properties including gingerols and shogaols [5]. The compounds will suppress the inflammatory actions that

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are the primary cause of acne development and suppress the proliferation of the pathogens associated with acne [6]. At the same time, lemon is rich in citric acid, vitamin C, and flavonoid and possesses antibacterial, antioxidant, and astringent properties, that help to clean pores, decrease excess sebum, and resolve post-acne hyperpigmentation [7]. Preliminary studies have indicated the potential of the synergistic effect of ginger and lemon. Previous literature has shown that the combined intake of ginger and lemon may have great effect on the skin radiance and acne lesions by increasing the anti-inflammatory and antibacterial effect [8]. Also, a recent study has pointed out the effectiveness of ginger extracts in Staphylococcus aureus and Propionibacterium acnes and lemon juice had strong bactericidal effect, which was better than in using some traditional cleansers [9, 10]. Despite these promising findings, there remains a scarcity of clinical studies evaluating the combined effect of ginger and lemon as a dietary intervention for acne management. This study, therefore, aims to investigate the effects of a 10-day intervention with ginger and lemon shots on acne severity and associated hematological markers in young adult women, providing preliminary evidence for its use as a natural, complementary approach to acne care.

METHODS

This interventional study employed a pre-post-trial design conducted over 10 days, from February 10, 2025 to February 19, 2025 to evaluate the effects of ginger-lemon shots on acne severity in young adults, with each participant serving as their own control. The study received approval from the institutional supervisor, and informed consent was obtained from all participants before enrollment. A total of 100 female volunteers aged 21–24 years with mild to moderate acne vulgaris were recruited via purposive sampling. Exclusion criteria encompassed individuals using antibiotics or other disease-based medications, those with chronic skin conditions, and persons with known allergies to ginger or citrus fruits. Participants were instructed to maintain their existing skincare regimens while refraining from initiating any new topical or oral treatments for the duration of the trial. The ginger-lemon shot was prepared daily using 50 g of fresh ginger root (*Zingiber officinale*), 50 mL of fresh lemon juice (*Citrus limon*), and 100 mL of filtered water. The preparation process involved washing, peeling, and chopping the ginger, blending it with lemon juice and water for 60 seconds using a high-speed blender, and then straining the mixture through a fine mesh to remove pulp and fibers. Each participant consumed a 100 mL shot daily for 10 consecutive days, typically in the evening. Before the intervention, a 3-day observation period was implemented to establish baseline dietary habits, skin condition, and protocol compliance, during which no shots were administered. Assessments included anthropometric measurements (height, weight, and BMI using a calibrated digital scale), biochemical analysis via complete blood count (CBC) to evaluate inflammatory markers, clinical evaluation of acne severity using the Global Acne Grading System (GAGS) with standardized photographic documentation on days 0 and 10, and dietary assessment through 3-day dietary recalls and food diaries to monitor nutrient intake and control for confounding factors such as dairy, sugar, and omega-3 consumption. All statistical analyses were performed using IBM SPSS Statistics version 27.0.

RESULTS

The high mean scores (≥4.1) across all sensory attributes indicate excellent acceptability of the ginger-lemon shots among participants. This strong palatability is crucial for adherence in nutritional interventions, suggesting that the formulation is both appealing and feasible for regular consumption. Such positive sensory reception supports its potential as a sustainable, consumer-friendly functional beverage (Table 1).

Table 1: Sensory Evaluation (N=100)

Sensory Attribute	Excellent (5)	Good (4)	Fair (3)	Poor (2)	Very Poor (1)	Mean Score
Taste	40	30	30	0	0	4.1
Aroma	60	20	20	0	0	4.4
Color	50	40	10	0	0	4.3
Overall Acceptability	40	40	20	0	0	4.2

The post-intervention results indicate a notable reduction in systemic inflammation, as evidenced by the decreases in WBC count, ESR, and CRP levels. The shift in differential counts, specifically a decrease in neutrophils and an increase in lymphocytes, suggests a positive immunomodulatory effect. These hematological improvements align with the observed clinical reduction in acne severity, supporting the anti-inflammatory properties of the ginger-lemon intervention (Table 2).

Table 2: Clinical and Hematological Outcomes Before and After a 10-Day Ginger-Lemon Shot Intervention (N=100)

Parameters	Reference Range	Baseline (Mean ± SD)	After 10 Days (Mean ± SD)	p-Value
WBC ($\times 10^9$/L)	4.0 – 11.0	9.8 ± 1.5	7.3 ± 1.3	<0.001
Neutrophils (%)	40 – 75	68 ± 6	62 ± 5	<0.001
Lymphocytes (%)	20 – 45	26 ± 5	31 ± 4	<0.001
Hemoglobin (g/dL)	12.0–16.0 (female)	13.4 ± 0.8	13.5 ± 0.7	0.301
Hematocrit (%)	36 – 46	40.1 ± 2.1	40.4 ± 1.9	0.215
Platelet Count ($\times 10^9$/L)	150 – 400	268 ± 40	270 ± 38	0.685
ESR (mm/hr)	0 – 20 (female)	18 ± 4	11 ± 3	<0.001
CRP (mg/L)	< 5	4.8 ± 0.9	2.1 ± 0.8	<0.001

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DISCUSSION

The results of this 10-day interventional trial indicate that Ginger plus Lemon Shots formulation is tolerable and has potential efficacy in skin health, mainly in alleviating symptoms of acne vulgaris. The high acceptability ratings of the sensory analysis are a decisive result, because palatability is one of the major determinants of long term adherence during functional food and nutraceutical interventions [11]. Clinically, the hematological parameters provide preliminary evidence of the formulation's systemic anti-inflammatory and immunomodulatory effects. The observed reductions in total leukocyte (WBC) count, erythrocyte sedimentation rate (ESR), and C-reactive protein (CRP) levels are indicative of a decrease in systemic inflammation [12]. This is highly relevant to acne pathogenesis, which is characterized by chronic low-grade inflammation [13]. The modest shift in leukocyte differentials, a decrease in neutrophils and an increase in lymphocytes, further suggests a positive modulation of the immune response, a property attributed to the key bioactive compounds in ginger, such as gingerols and shogaols [14]. The safety profile of the intervention is supported by the stable levels of hemoglobin, hematocrit, and platelet counts. The significant reduction in CRP provides further validation of the anti-inflammatory properties of the ginger and lemon mixture [15, 16]. These systemic improvements correlate with the participants' self-reported dermatological outcomes, including a reduction in acne lesions and skin redness. The concordance between improved inflammatory markers and clinical skin manifestations suggests that the mechanism of action likely involves anti-inflammatory and immunomodulatory pathways, justifying its exploration as a natural complementary approach for acne management [17, 18]. Moreover, the increasing interest in plant-derived bioactives for cosmetic and dermatological applications aligns with the growing trend of green cosmetics, where natural food ingredients like ginger and lemon are being incorporated for their antioxidant and skin-healing properties [19]. Additionally, emerging research highlights the psychodermatological benefits of nutraceuticals and psychobiotics in improving skin conditions through gut-skin and stress modulation pathways, which may further complement the effects observed in this trial [20]. The interpretation of these promising results must consider the study's limitations. The uncontrolled, single-arm design, absence of a placebo group, small sample size (n=10), and short intervention period (10 days) limit generalizability and the assessment of long-term effects or side effects. The use of a single daily dose without pharmacokinetic data leaves the optimal regimen undefined. Despite these limitations, the study provides a clinical rationale for using a simple, natural formulation as an adjunct therapy for acne, aligning with the growing demand for plant-based health solutions. The improvement in hematological markers offers objective support for ginger and lemon's traditional benefits. Future research should focus on double-blind, placebo-controlled trials with larger samples, longer follow-up, standardized dermatological assessments, and exploration of mechanisms such as the gut-skin axis.

CONCLUSIONS

In conclusion, this preliminary investigation indicates that daily consumption of fresh ginger and lemon shots over 10 days may be a viable, natural, and well-accepted complementary strategy for improving skin condition and reducing acne symptoms in young adult women. The intervention was associated with significant reductions in key systemic inflammation markers (WBC, ESR, CRP) and was highly rated for its sensory properties, which is crucial for adherence.

Authors Contribution

Conceptualization: AF, MA
Methodology: AF, NW
Formal analysis: HI,
Writing review and editing: SI, EA, Q, IGH, TA, M, MA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

All the authors declare no conflict of interest.

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