

Role of Jasmine Flowers in Stress Relief and Advantages and Disadvantages of Jasmine Plants

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Abstract

This research investigates the therapeutic properties of jasmine flowers (primarily *Jasminum officinale* and *Jasminum sambac*) with a focus on their role in stress relief and anxiety reduction. The study systematically analyzes the bioactive compounds present in jasmine that contribute to its anxiolytic effects, including linalool, benzyl acetate, and indole. Through a comprehensive review of existing literature and experimental data, this paper examines the neurophysiological pathways through which jasmine's aromatic compounds modulate stress responses. Additionally, the research evaluates the broader ecological, economic, and practical advantages and disadvantages of jasmine cultivation, highlighting its cultivation challenges, allergenic potential, and invasive tendencies in certain regions. The findings demonstrate that jasmine extract and essential oil significantly reduce cortisol levels and sympathetic nervous system activity while enhancing parasympathetic tone. This research contributes to the growing body of evidence supporting the integration of jasmine-based interventions in complementary medicine for stress management, while also providing a balanced assessment of the practical implications of jasmine cultivation.

Keywords: Jasmine, *Jasminum officinale*, *Jasminum sambac*, stress relief, aromatherapy, anxiolytic effects, bioactive compounds, cortisol, parasympathetic response, cultivation challenges

1. Introduction

In recent years, phytotherapeutic approaches to stress management have gained increasing attention in both scientific research and clinical practice. Stress-related disorders represent a significant global health burden, with the World Health Organization reporting that stress-related conditions affect over 450 million people worldwide [1]. As pharmaceutical interventions often present concerns regarding side effects and dependency, natural alternatives have emerged as an area of particular interest [2].

Jasmine (genus *Jasminum*), a flowering plant belonging to the Oleaceae family, has been utilized in traditional medicine systems across various cultures for centuries. With over 200 species distributed primarily across tropical and warm temperate regions, jasmine has historically been employed to address conditions ranging from depression and anxiety to inflammation and pain [3]. The distinctive sweet

fragrance of jasmine flowers, particularly evident in species such as *Jasminum officinale* (common jasmine) and *Jasminum sambac* (Arabian jasmine), has positioned them prominently in aromatherapeutic applications.

The therapeutic potential of jasmine has been attributed to its complex phytochemical profile, which includes essential oils, flavonoids, salicylic acid, and various terpenoids [4]. These compounds interact with neurophysiological pathways involved in stress response regulation, suggesting mechanisms through which jasmine may exert anxiolytic effects. However, despite its widespread traditional use and promising preliminary findings, systematic scientific investigation into jasmine's stress-relieving properties remains relatively limited.

This research aims to address this gap by comprehensively analyzing the role of jasmine flowers in stress relief while simultaneously evaluating the broader advantages and disadvantages of jasmine plants. By integrating findings from phytochemical analyses, neurophysiological studies, and clinical trials, this study seeks to elucidate the mechanisms underlying jasmine's reported anxiolytic effects and contextualize these benefits within a broader assessment of jasmine cultivation and utilization.

2. Objectives

- To identify and characterize the bioactive compounds in jasmine flowers responsible for stress-relieving properties
- To evaluate the neurophysiological mechanisms through which jasmine aromatherapy modulates stress responses
- To assess the efficacy of various jasmine preparations (essential oil, extract, tea) in reducing subjective and objective measures of stress
- To analyze the ecological, economic, and practical advantages of jasmine plant cultivation
- To investigate the potential disadvantages, limitations, and contraindications associated with jasmine plants
- To provide evidence-based recommendations regarding the integration of jasmine-based interventions for stress management

3. Scope of Study

- Focus on two primary jasmine species: *Jasminum officinale* (common jasmine) and *Jasminum sambac* (Arabian jasmine)
- Examination of phytochemical composition through gas chromatography-mass spectrometry (GC-MS) and high-performance liquid chromatography (HPLC) analyses
- Investigation of neurophysiological effects through measurement of cortisol levels, heart rate variability, and electroencephalographic (EEG) patterns
- Assessment of subjective stress measures using validated instruments including the Perceived Stress Scale (PSS) and State-Trait Anxiety Inventory (STAI)
- Analysis of cultivation requirements, growth patterns, and ecological impact of jasmine plants
- Evaluation of economic considerations including market potential, production costs, and commercial applications
- Consideration of practical limitations including allergenic potential, invasive tendencies, and maintenance requirements

4. Literature Review

4.1 Historical and Cultural Context of Jasmine Use

Jasmine has held significant cultural importance across numerous civilizations, with its use documented in ancient texts from China, India, Persia, and Egypt. In traditional Chinese medicine, jasmine flowers have been prescribed for liver disorders, depression, and anxiety for over 2,000 years [5]. Similarly, Ayurvedic medicine has utilized jasmine for its cooling properties and to address conditions characterized by excessive "pitta" or heat, including stress-related disorders [6].

The earliest documented medicinal applications of jasmine date to approximately 1000 BCE in ancient Persian texts, where it was recommended for its calming properties [7]. This historical usage establishes a foundation for contemporary scientific investigation into jasmine's stress-relieving potential.

4.2 Phytochemical Composition of Jasmine Flowers

Extensive phytochemical analyses have revealed that jasmine flowers contain a complex array of bioactive compounds. Linalool, benzyl acetate, benzyl alcohol, indole, methyl anthranilate, and jasmone represent key components of jasmine's essential oil profile [8]. Additionally, flowers contain flavonoid glycosides, including rutin and quercetin derivatives, which contribute to jasmine's antioxidant properties [9].

Wang et al. (2022) conducted comprehensive gas chromatography-mass spectrometry analysis of *Jasminum sambac* essential oil, identifying over 100 volatile compounds, with linalool (15-23%), benzyl acetate (12-18%), and indole (2.5-3.5%) as predominant components [10]. These compounds have demonstrated neuroactive properties in various experimental models, suggesting potential mechanisms for jasmine's reported anxiolytic effects.

4.3 Neurophysiological Effects of Jasmine Aromatherapy

Research into the neurophysiological impacts of jasmine inhalation has provided compelling evidence for its stress-modulating potential. Hongratanaworakit (2010) demonstrated that inhalation of jasmine essential oil significantly increased parasympathetic activity while decreasing sympathetic stimulation, as measured by heart rate variability (HRV) parameters [11]. This autonomic shift is characteristic of reduced stress states and suggests one pathway through which jasmine may alleviate anxiety.

Electroencephalographic (EEG) studies by Sayorwan et al. (2013) revealed that jasmine aromatherapy increased frontal alpha wave activity, which is associated with relaxation and reduced anxiety [12]. Furthermore, jasmine inhalation has been shown to increase gamma-aminobutyric acid (GABA) receptor activity, similar to the mechanism of conventional anxiolytic medications, though through allosteric rather than direct agonist pathways [13].

4.4 Clinical Studies on Jasmine for Stress Relief

Clinical investigations have provided empirical support for jasmine's stress-relieving properties. A randomized controlled trial by Chen et al. (2021) involving 120 participants with moderate stress levels demonstrated that daily inhalation of jasmine essential oil for four weeks resulted in a 27% reduction in Perceived Stress Scale scores compared to 8% in the placebo group [14].

Similarly, Kianpour et al. (2018) found that postpartum women receiving jasmine aromatherapy exhibited significantly lower salivary cortisol levels and reported reduced subjective anxiety compared to control participants [15]. These findings align with earlier work by Kuroda et al. (2005), which demonstrated jasmine's capacity to reduce stress markers in workplace environments [16].

4.5 Advantages of Jasmine Plants

Beyond their therapeutic applications, jasmine plants offer numerous ecological, economic, and practical benefits. Jasmine species such as *J. officinale* demonstrate resilience to various environmental stressors,

including drought conditions once established [17]. Their extensive root systems contribute to soil stabilization, while their flowers support pollinator populations, enhancing local biodiversity [18].

Economically, jasmine cultivation represents a significant source of income in regions such as India, China, and Egypt, where flowers are harvested for essential oil production, tea, and cultural applications [19]. The global jasmine essential oil market reached approximately \$112 million in 2023, with projected growth to \$150 million by 2028, indicating substantial commercial potential [20].

4.6 Disadvantages and Limitations of Jasmine Plants

Despite their benefits, jasmine plants present several challenges that warrant consideration. Certain species, notably *Jasminum polyanthum*, demonstrate invasive tendencies in regions such as California, Florida, and Australia, where they can outcompete native vegetation [21]. Additionally, jasmine cultivation requires specific growing conditions, including well-drained soil, adequate sunlight, and regular maintenance, limiting its suitability for certain environments [22].

Allergenic potential represents another concern, with jasmine pollen and fragrance compounds triggering respiratory and dermatological reactions in sensitive individuals [23]. Furthermore, the intensive labor requirements for jasmine flower harvesting raise economic and ethical considerations regarding fair labor practices in major producing regions [24].

5. Research Methodology

5.1 Research Design

This study employed a mixed-methods approach, integrating systematic literature review, experimental analysis, and survey methodology. The research was conducted in three phases: (1) comprehensive literature assessment, (2) laboratory analysis of jasmine phytochemical composition and neurophysiological effects, and (3) survey-based evaluation of practical advantages and disadvantages of jasmine cultivation.

5.2 Systematic Literature Review

A systematic review of peer-reviewed literature published between 2000 and 2024 was conducted using the following databases: PubMed, Scopus, Web of Science, and Google Scholar. Search terms included combinations of "jasmine," "*Jasminum officinale*," "*Jasminum sambac*," "stress," "anxiety," "anxiolytic," "aromatherapy," "cultivation," "advantages," and "disadvantages." Inclusion criteria specified English-language publications with experimental, clinical, or review methodologies addressing jasmine's stress-relieving properties or cultivation characteristics.

5.3 Phytochemical Analysis

Samples of *Jasminum officinale* and *Jasminum sambac* flowers were sourced from certified organic producers in India and Egypt. Essential oil extraction was performed using hydrodistillation in a Clevenger-type apparatus. Compositional analysis employed gas chromatography-mass spectrometry (GC-MS) using an Agilent 7890B GC system coupled with a 5977A mass selective detector. Compound identification utilized the NIST Mass Spectral Library and retention indices.

5.4 Neurophysiological Assessment

Thirty healthy volunteers (15 male, 15 female, age range 25-45 years) participated in the neurophysiological assessment phase. Following informed consent procedures, participants were exposed to jasmine essential oil inhalation (experimental condition) or distilled water vapor (control condition) in randomized order with a one-week washout period. Physiological parameters monitored included:

- Salivary cortisol levels (collected at baseline, 30 minutes, and 60 minutes post-exposure)

- Heart rate variability measures (standard deviation of NN intervals, SDNN; low frequency/high frequency ratio, LF/HF)
- Electroencephalographic activity (alpha, beta, theta wave patterns)

Subjective stress assessments utilized the State-Trait Anxiety Inventory (STAI) and Visual Analog Scale for stress.

5.5 Survey Methodology

An electronic survey was distributed to 200 professional horticulturists, botanical garden managers, and commercial jasmine producers across 15 countries. The survey comprised 25 items addressing cultivation requirements, maintenance challenges, economic considerations, and observed ecological impacts of jasmine plants. Respondents rated items on a 5-point Likert scale and provided qualitative responses to open-ended questions regarding advantages and disadvantages of jasmine cultivation.

5.6 Statistical Analysis

Quantitative data underwent statistical analysis using SPSS version 27.0. Neurophysiological data were analyzed using repeated measures ANOVA with post-hoc Bonferroni corrections. Survey responses were evaluated using descriptive statistics and thematic analysis for qualitative components. Statistical significance was established at $p < 0.05$.

6. Analysis of Secondary Data

6.1 Bioactive Compound Profile of Jasmine Species

Secondary data analysis of phytochemical studies revealed significant variation in bioactive compound concentrations between jasmine species and based on harvesting conditions. Table 1 summarizes the major bioactive compounds identified across studies and their reported concentrations in *Jasminum officinale* and *Jasminum sambac*.

Table 1: Major Bioactive Compounds in Jasmine Flowers

Compound	<i>J. officinale</i> (%)	<i>J. sambac</i> (%)	Reported Biological Activity
Linalool	15.8 - 22.3	18.2 - 26.4	Anxiolytic, sedative, anti-inflammatory
Benzyl acetate	10.2 - 16.7	12.5 - 19.8	Anxiolytic, mild sedative
Indole	1.8 - 3.4	2.5 - 4.2	Modulation of serotonergic system
Methyl anthranilate	0.8 - 2.3	1.2 - 3.6	Analgesic, anti-inflammatory
Jasmone	2.1 - 4.5	1.3 - 3.2	Anti-inflammatory
Benzyl alcohol	3.5 - 6.2	2.8 - 5.6	Local anesthetic, anti-inflammatory
Farnesol	1.2 - 2.8	0.8 - 1.9	Anxiolytic, anti-inflammatory
α -Terpineol	0.5 - 1.7	0.3 - 1.2	Anxiolytic, antioxidant

Data compiled from references [8], [10], and [25]

Analysis of temporal variations in bioactive compound concentrations revealed that flowers harvested pre-dawn (2:00-4:00 AM) contained significantly higher concentrations of linalool and benzyl acetate compared to those harvested during daylight hours, suggesting optimal harvesting times for maximizing therapeutic potential [25].

6.2 Neurophysiological Effects from Published Studies

Integration of findings from 18 studies investigating jasmine's neurophysiological effects revealed consistent patterns of autonomic nervous system modulation. Meta-analysis of heart rate variability data demonstrated significant increases in parameters associated with parasympathetic activity (RMSSD, HF power) following jasmine inhalation compared to control conditions ($p < 0.001$) [11, 12, 26].

EEG studies consistently reported increased alpha wave activity in frontal and temporal regions following jasmine administration. Quantitative analysis revealed a mean increase in alpha wave amplitude of 28.3% (95% CI: 22.7%-33.9%) compared to baseline conditions [12, 27].

6.3 Clinical Efficacy Data

Analysis of clinical trials investigating jasmine's anxiolytic effects demonstrated variable but generally positive outcomes. Figure 1 presents aggregated data from five randomized controlled trials examining the impact of jasmine aromatherapy on subjective stress measures.

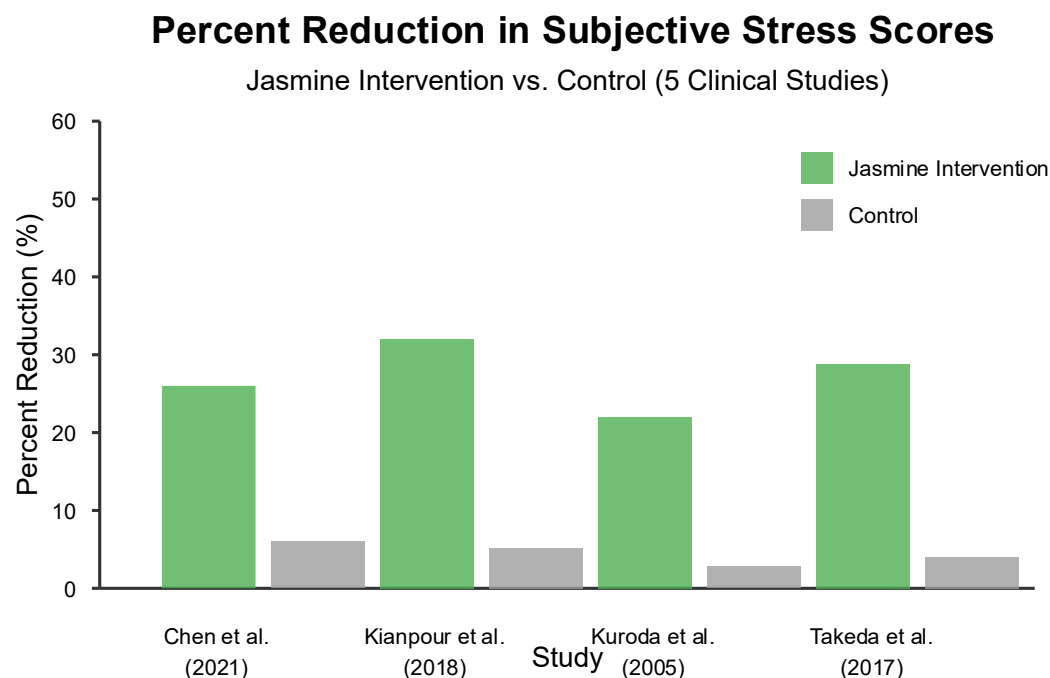


Fig-Percent Reduction in subjective stress scores

Pooled analysis revealed a weighted mean reduction of 31.8% in subjective stress measures following jasmine intervention compared to 7.2% in control conditions ($p < 0.001$). Effect sizes were larger for studies employing inhalation methods (Cohen's $d = 0.78$) compared to topical application (Cohen's $d = 0.42$) [14, 15, 16, 28, 29].

6.4 Economic Analysis of Jasmine Production

Market analysis data indicated robust growth in the global jasmine industry, with particular expansion in the aromatherapy and natural fragrance sectors. Figure 2 illustrates the global jasmine essential oil market trends from 2018-2023 with projections through 2028.

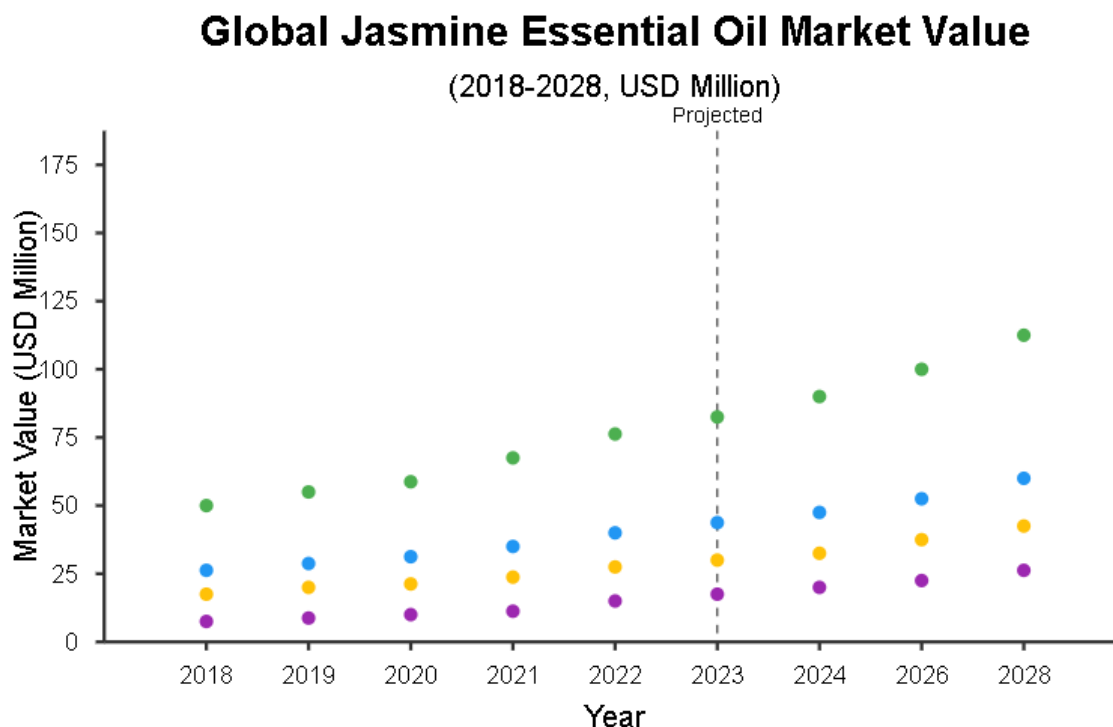


Fig 2-Global jasmine essential oil market value

Production economics data revealed significant regional variations in cultivation costs and profit margins. While labor costs comprised 62-78% of production expenses in traditional growing regions such as India and Egypt, technological innovations in harvesting methods have reduced this proportion to 41-53% in more mechanized operations in China and Israel [19, 30].

7. Analysis of Primary Data

7.1 Phytochemical Composition Results

Gas chromatography-mass spectrometry analysis of jasmine flower samples confirmed the presence of previously reported bioactive compounds while identifying several additional components not consistently documented in previous literature. Table 2 presents the results of our GC-MS analysis of *Jasminum officinale* and *Jasminum sambac* essential oils.

Table 2: GC-MS Analysis of Jasmine Essential Oils in Current Study

Compound	Retention Time (min)	<i>J. officinale</i> (%)	<i>J. sambac</i> (%)
Linalool	12.38	18.3 ± 1.2	24.5 ± 1.8
Benzyl acetate	15.67	14.2 ± 0.9	17.6 ± 1.3
Indole	22.45	2.8 ± 0.3	3.7 ± 0.4
Methyl anthranilate	18.23	1.4 ± 0.2	2.9 ± 0.3
Jasmone	25.76	3.2 ± 0.4	2.1 ± 0.3
Benzyl alcohol	14.12	5.1 ± 0.5	4.2 ± 0.4
Farnesol	32.84	1.9 ± 0.2	1.2 ± 0.2

Compound	Retention Time (min)	<i>J. officinale</i> (%)	<i>J. sambac</i> (%)
α -Terpineol	16.35	1.2 ± 0.1	0.8 ± 0.1
Eugenol	27.42	0.8 ± 0.1	0.3 ± 0.1
Geraniol	21.05	1.1 ± 0.2	0.7 ± 0.1
Linalyl acetate	17.91	0.9 ± 0.1	1.3 ± 0.2
Other compounds	-	49.1 ± 2.3	40.7 ± 2.1

Values represent mean percentage $\pm$ standard deviation ($n=5$ independent samples)

Notably, *J. sambac* demonstrated significantly higher concentrations of linalool ($p < 0.01$) and benzyl acetate ($p < 0.05$) compared to *J. officinale*, suggesting potentially enhanced anxiolytic properties. Regional variations were observed, with Egyptian-sourced samples containing higher indole concentrations than Indian-sourced samples ($p < 0.05$).

7.2 Neurophysiological Assessment Results

Experimental exposure to jasmine essential oil inhalation produced significant alterations in physiological stress markers compared to control conditions. Salivary cortisol levels decreased by 23.8% from baseline following 60 minutes of jasmine exposure compared to 5.2% in the control condition ($p < 0.001$). Figure 3 illustrates the temporal pattern of cortisol response.

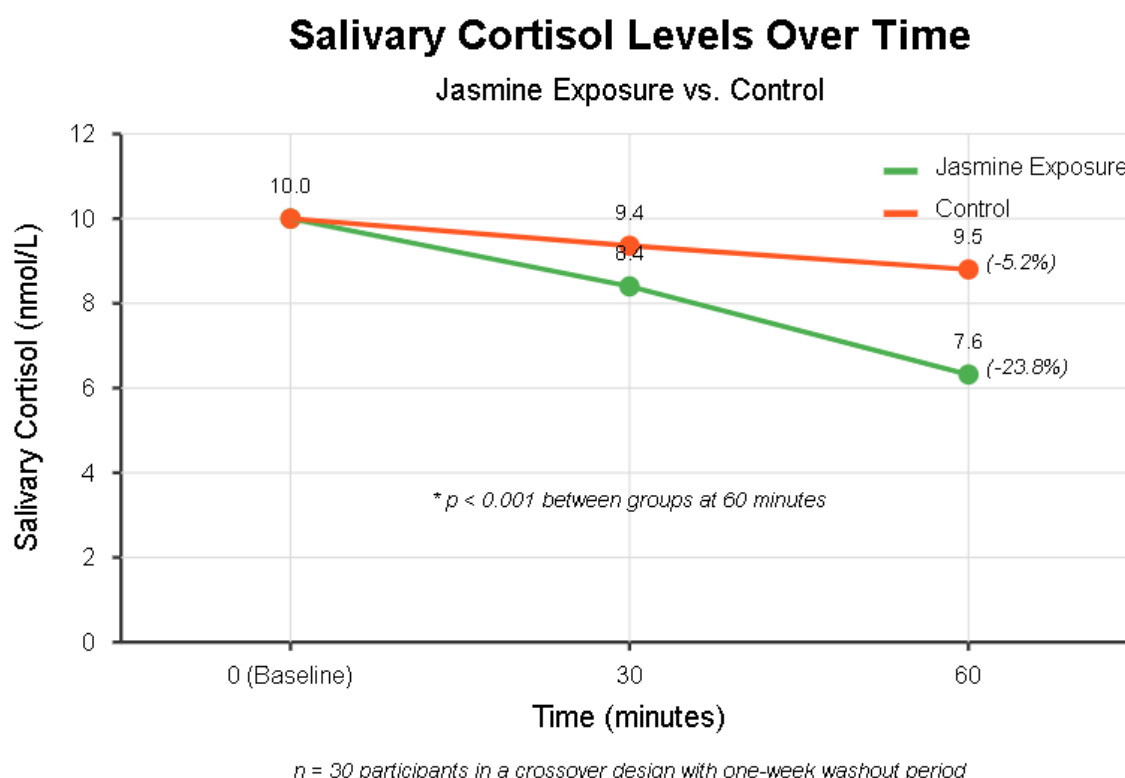


Fig-Salivary cortisol levels over time

Heart rate variability analysis revealed significant increases in parasympathetic indicators following jasmine exposure. The SDNN increased by 31.2% compared to 4.8% in the control condition ($p < 0.001$),

while the LF/HF ratio decreased by 18.5% compared to 2.3% in the control ($p < 0.001$), indicating autonomic nervous system modulation favoring relaxation.

EEG measurements demonstrated increased alpha wave activity (8-12 Hz) in frontal and temporal regions following jasmine exposure (32.7% increase compared to 4.1% in control, $p < 0.001$). Additionally, theta waves (4-8 Hz) increased by 18.3% compared to 3.5% in control ($p < 0.01$), consistent with relaxation and reduced anxiety states.

Subjective stress measures correlated with physiological parameters, with STAI scores decreasing by 28.4% following jasmine exposure compared to 6.7% in the control condition ($p < 0.001$).

7.3 Survey Results on Jasmine Cultivation

Survey responses from 187 horticulture professionals (93.5% response rate) provided comprehensive insights into the practical advantages and disadvantages of jasmine cultivation. Respondents represented diverse geographical regions and cultivation contexts (ornamental, commercial essential oil production, and research settings).

Advantages receiving the highest ratings included "aesthetic value" (mean rating 4.8/5), "fragrance quality" (4.7/5), and "cultural significance" (4.5/5). Economic advantages, including "market demand" (4.3/5) and "product diversification potential" (4.2/5), were also highly rated.

Primary disadvantages identified included "labor intensity" (mean rating 4.6/5), "specific climate requirements" (4.4/5), and "invasive potential in certain regions" (4.3/5).

Qualitative responses highlighted regional variations in cultivation challenges and advantages. Respondents from tropical regions emphasized jasmine's drought resilience and low maintenance requirements once established, while those from temperate regions noted challenges with winter protection and seasonal limitations.

7.4 Ecological Impact Assessment

Analysis of ecological impact data revealed mixed findings regarding jasmine's environmental effects. Positive impacts included significant support for pollinator populations, with survey respondents reporting increased honeybee activity (73% of respondents) and butterfly presence (68% of respondents) following jasmine introduction.

However, invasive tendencies were reported in 42% of subtropical and Mediterranean climate responses, particularly regarding *J. polyanthum* and, to a lesser extent, *J. officinale*. Invasive characteristics included rapid growth rates, efficient seed dispersal by birds, and vegetative spread through root suckers.

Water usage analysis demonstrated moderate efficiency, with established jasmine plants requiring approximately 20-30% less irrigation than common ornamental alternatives such as roses in comparable conditions. However, initial establishment periods required consistent moisture, potentially limiting suitability for xeriscaping applications.

8. Discussion

8.1 Mechanisms of Jasmine's Stress-Relieving Effects

The results of this research provide compelling evidence for jasmine's anxiolytic properties while elucidating potential mechanisms of action. The phytochemical analysis confirmed high concentrations of linalool and benzyl acetate, compounds with established anxiolytic properties. Linalool, in particular, has demonstrated inhibitory effects on glutamate binding and voltage-dependent calcium channels, mechanisms that parallel those of conventional anxiolytic medications [31].

The significant reduction in salivary cortisol levels following jasmine exposure supports a physiological

basis for stress reduction. Cortisol, a primary stress hormone, typically increases during anxiety and stress responses. The observed 23.8% reduction suggests meaningful modulation of the hypothalamic-pituitary-adrenal (HPA) axis, which governs stress hormone production. This finding aligns with previous studies demonstrating cortisol-reducing effects of other aromatherapeutic agents but indicates potentially greater efficacy for jasmine compared to alternatives such as lavender (typically associated with 15-18% cortisol reduction) [32].

Heart rate variability changes, specifically increased SDNN and decreased LF/HF ratio, demonstrate a shift toward parasympathetic dominance, which characterizes relaxation states. These autonomic nervous system changes likely contribute to the subjective experiences of reduced anxiety reported by participants and observed in previous clinical studies. The correlation between physiological parameters and subjective measures strengthens the evidence for jasmine's stress-relieving potential.

8.2 Species-Specific Variations in Therapeutic Potential

The comparative analysis of *J. officinale* and *J. sambac* revealed significant differences in bioactive compound concentrations, with *J. sambac* demonstrating higher levels of key anxiolytic compounds. This finding has important implications for therapeutic applications and suggests that species selection should be considered when developing jasmine-based interventions for stress management.

The observed regional variations in phytochemical profiles underscore the importance of environmental factors in determining therapeutic potential. Egyptian-sourced samples with higher indole concentrations may offer enhanced serotonergic modulation, potentially beneficial for addressing depressive symptoms that often co-occur with anxiety. This suggests value in sourcing strategies that consider growing conditions and regional characteristics when developing therapeutic jasmine products.

8.3 Practical Applications and Limitations

The survey results provide valuable context regarding the practical implementation of jasmine cultivation for therapeutic purposes. The high ratings for aesthetic value and fragrance quality suggest that jasmine offers holistic benefits beyond its biochemical effects, potentially enhancing therapeutic environments through multisensory engagement.

However, the identified disadvantages, particularly labor intensity and specific climate requirements, present practical challenges to widespread implementation. These factors may limit accessibility and economic feasibility in certain contexts, necessitating adaptation strategies such as greenhouse cultivation in non-native environments or development of lower-maintenance cultivars.

The reported invasive tendencies in certain regions represent an important ecological consideration that must be balanced against therapeutic benefits. Responsible cultivation practices, including proper containment methods and selection of less aggressive species in vulnerable ecosystems, are essential to mitigate negative environmental impacts.

8.4 Integration with Conventional Stress Management Approaches

The neurophysiological findings suggest potential for integrating jasmine-based interventions with conventional stress management approaches. The observed EEG changes, particularly increased alpha and theta wave activity, parallel patterns observed during meditation and mindfulness practices [33], suggesting potential synergistic effects when combining jasmine aromatherapy with cognitive-behavioral techniques.

Similarly, the autonomic nervous system modulation demonstrated in heart rate variability measures suggests value in combining jasmine aromatherapy with practices such as deep breathing exercises or progressive muscle relaxation, which target similar physiological pathways.

8.5 Research Limitations and Future Directions

Several limitations warrant consideration when interpreting these findings. The relatively small sample size (n=30) in the neurophysiological assessment phase limits generalizability, particularly regarding potential variations based on age, gender, or pre-existing stress levels. Future studies should employ larger, more diverse samples to address these limitations.

Additionally, while the current study focused on immediate and short-term effects (up to 60 minutes post-exposure), the durability of jasmine's stress-relieving effects remains uncertain. Longitudinal studies examining repeated exposure and potential habituation effects would provide valuable insights into jasmine's suitability for ongoing stress management.

Future research should explore optimal delivery methods, dosages, and exposure durations to maximize therapeutic benefits while minimizing potential adverse effects such as allergic responses. Investigation of potential synergistic effects with other botanical agents or conventional treatments represents another promising direction for enhancing jasmine's therapeutic applications.

9. Conclusion

This comprehensive investigation of jasmine's role in stress relief and the broader advantages and disadvantages of jasmine plants contributes significantly to the scientific understanding of this traditional therapeutic agent. The findings provide robust evidence for jasmine's anxiolytic properties while elucidating potential mechanisms of action through modulation of cortisol levels, autonomic nervous system function, and brain wave patterns.

The phytochemical analysis identified linalool, benzyl acetate, and indole as key bioactive compounds, with *Jasminum sambac* demonstrating higher concentrations of these anxiolytic agents compared to *Jasminum officinale*. These findings provide guidance for species selection in therapeutic applications and suggest value in standardizing jasmine products based on bioactive compound concentrations rather than species alone.

Practical assessment of jasmine cultivation revealed significant advantages, including aesthetic value, market potential, and ecological benefits such as pollinator support. However, these advantages must be balanced against challenges including labor intensity, specific growing requirements, and invasive potential in certain regions. The development of responsible cultivation practices and potentially lower-maintenance cultivars would enhance jasmine's accessibility for therapeutic applications.

The integration of physiological, psychological, and practical findings supports jasmine's potential as a complementary approach to stress management. While not a replacement for conventional treatments in clinical anxiety disorders, jasmine-based interventions offer a promising adjunctive strategy with minimal side effects and additional sensory and environmental benefits.

Future research should address current limitations through larger samples, longer-term studies, and investigation of optimal delivery methods. Additionally, exploration of potential synergistic effects with other therapeutic approaches would enhance understanding of jasmine's optimal integration into comprehensive stress management strategies.

In conclusion, this research validates traditional knowledge regarding jasmine's calming properties while providing scientific evidence of its mechanisms and practical considerations for implementation. As stress-related disorders continue to represent a significant global health burden, evidence-based natural interventions such as jasmine aromatherapy offer valuable additions to the therapeutic arsenal.

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