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Mini-Review

Evaluation of the effects of essential oils on the reduction of stress: a rapid narrative review

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Abstract: The present narrative review focuses on exploring the role of essential oils as a significant intervention in stress management. Stress, defined as an adaptive response to challenging stimuli, manifests in various spheres, with its approach being essential for the preservation of physical and emotional well-being. Essential oils present themselves as bioactive agents whose impact occurs on the nervous system through olfactory and cutaneous pathways, directly influencing emotional processes, memories, mood, and behavior. Notable among these essential oils are lavender, chamomile, and bergamot, recognized for their anti-stress properties. The application of these essential oils, whether through inhalation or cutaneous administration, demonstrates efficacy in promoting beneficial physiological and psychological effects. Individualization of treatment is emphasized, considering synergies, affinities, and personal preferences. The diversity of products, including diffusers and creams, amplifies application options, offering a flexible and personalized approach. In the clinical realm, the inclusion of essential oils in the stress management protocol is supported by their ability to modulate emotional responses and promote states of relaxation. In summary, essential oils emerge as a prominent and customizable strategy in stress treatment, contributing significantly to the promotion of physical and emotional balance in individuals.

Keywords: Essential Oils; Stress Management; Individualized Treatment.

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1. Introduction

Stress, an organism's adaptive response to challenges, can serve as both a motivating force and a source of significant negative impacts on physical and mental health. This multifactorial phenomenon manifests in a complex manner, affecting everything from the immune system to reproductive health. Its ramifications encompass an extensive range of physical and psychological symptoms, compromising overall quality of life. Within the realm of stress, two scenarios stand out: acute stress, related to specific events, and chronic stress, associated with persistent situations. Chronic stress, in particular, is linked to various medical conditions, ranging from cardiovascular diseases to psychiatric disorders [1].

The innovative approach proposed in this article seeks to explore an alternative for dealing with persistent stress: the use of essential oils. These volatile compounds extracted from plants, known not only for their pleasant fragrances but also for therapeutic properties, can influence the human nervous system. Understanding how essential oils interact with the nervous system opens avenues for practical strategies to integrate them into daily life with the goal of alleviating chronic stress symptoms [1, 2]. Recent studies have highlighted the potential of these oils not just as pleasant fragrances but as effective mood, anxiety, and stress modulators. The olfactory pathway through which essential oils are inhaled connects to the brain's limbic system, responsible for emotional and behavioral

processes. This direct link between essential oils and the emotional center suggests that these compounds can play a significant role in stress management [2, 3].

By exploring essential oils recognized for their anti-stress properties, this article aims to provide not only a theoretical review but also practical insights on how to choose, combine, and apply these resources effectively. Thus, this narrative review aims to offer a comprehensive perspective on the role of essential oils as a potential tool in stress management, highlighting not only the diversity of available oils but also their practical applications to promote physical and mental well-being.

2. Materials and Methods

The conduction of this narrative review followed a rigorous methodological protocol, aiming to compile and critically analyze studies investigating the role of essential oils in stress control. A literature search was conducted across various scientific databases, including PubMed and Scopus, using search terms such as "essential oils," "stress," "stress management," "anxiety," and "well-being." Article selection was guided by inclusion criteria prioritizing thematic relevance, methodological quality, and recentness of publications. Titles and abstracts of identified articles were reviewed, followed by a comprehensive analysis of articles meeting the initial criteria. Experimental studies, systematic reviews, and meta-analyses were prioritized to ensure a comprehensive and evidence-based approach.

The categorization and organization of selected studies were based on their methodological approaches, main focus, and presented results. This classification allowed for a detailed analysis of different perspectives and approaches present in the literature on essential oils and stress. The critical analysis of studies included evaluating methodological quality and the consistency of presented results. This phase aimed to identify patterns, discrepancies, and gaps in the literature, contributing to a deeper understanding of the current state of knowledge in this area.

Essential oils recognized for their anti-stress properties were identified and characterized regarding their chemical composition and aromatic note. This step allowed mapping the specific properties of each oil, indicating their potential applications for different aspects of stress.

3. Review

3.1. Stress: Causes and Consequences

Stress is a physiological and psychological response to situations demanding adaptation or change, and it can be either positive or negative depending on its intensity, duration, and coping mechanisms. The causes of stress vary among individuals but are generally related to environmental, social, personal, professional, or health-related factors. The consequences of stress can impact both the body and mind, leading to alterations in the immune, cardiovascular, endocrine, digestive, respiratory, muscular, nervous, and reproductive systems. It can also result in anxiety, depression, irritability, insomnia, difficulty concentrating, low self-esteem, among other issues [4].

Acute stress occurs in response to specific events, such as a shock, an exam, an argument, or a dangerous situation, and it lasts for a short duration, potentially benefiting attention, motivation, and performance. Chronic stress, on the other hand, persists for weeks, months, or years due to ongoing situations like financial, family, work, or health-related problems. Chronic stress can significantly harm physical and mental health, leading to conditions such as hypertension, diabetes, obesity, ulcers, asthma, heart attack, stroke, cancer, and more [5].

Physical symptoms of stress include headaches, chest pain, palpitations, rapid heartbeat, sweating, tremors, muscle tension, back pain, fatigue, insomnia, changes in appetite, nausea, vomiting, diarrhea, constipation, gastritis, ulcers, reflux, allergies, infections, hair loss, acne, and herpes. Psychological symptoms may involve anxiety, fear, nervousness,

distress, sadness, depression, irritability, anger, aggression, impatience, frustration, insecurity, low self-esteem, guilt, pessimism, apathy, discouragement, lack of motivation, difficulty concentrating, memory and learning issues, decision-making challenges, creativity problems, isolation, and interpersonal conflicts. Clinical approaches to stress involve identifying specific causes in a given context, assessing individual risk factors, and implementing management strategies. Clinical interventions may include cognitive-behavioral therapies, pharmacological treatments when necessary, relaxation techniques, lifestyle changes, and psychosocial support. Recognizing the complexity of stress and its clinical ramifications is crucial for providing a comprehensive approach that considers both the physical and psychological aspects of this condition. Personalized and multidisciplinary treatment is essential to mitigate the impacts of stress on an individual's overall health [6].

Stress can negatively impact health and quality of life in various ways, influencing the body's balance and impairing the ability to cope with daily challenges. Complications associated with stress encompass a wide range of conditions, including cardiovascular problems like hypertension, arrhythmias, angina, heart attack, and stroke. Additionally, stress affects the endocrine system, contributing to the development of conditions such as diabetes, obesity, and thyroid and adrenal dysfunctions [6].

In the gastrointestinal realm, stress is linked to disorders like gastritis, ulcers, gastroesophageal reflux, irritable bowel syndrome, and Crohn's disease. In the respiratory system, stress can trigger or worsen conditions such as asthma, bronchitis, sinusitis, and rhinitis. In the immune system, stress increases susceptibility to allergies, infections, inflammations, and even cancer. Beyond physical manifestations, stress also impacts the musculoskeletal, neurological, psychiatric, dermatological, and reproductive domains. It can result in back pain, fibromyalgia, arthritis, headache, migraine, epilepsy, Alzheimer's, anxiety, depression, panic, phobias, obsessive-compulsive disorder, bipolar disorder, schizophrenia, acne, psoriasis, eczema, vitiligo, erectile dysfunction, premature ejaculation, anorgasmia, vaginismus, infertility, miscarriage, premature birth, and early menopause. Moreover, stress can affect emotional and psychosocial aspects, diminishing satisfaction, well-being, pleasure, self-esteem, self-confidence, self-efficacy, self-image, self-expression, autonomy, creativity, productivity, achievement, cooperation, communication, socialization, affection, sexuality, spirituality, and the sense of life. This interconnection between stress and multiple health domains underscores the importance of integrated approaches in stress management to preserve overall well-being [6, 7].

3.1. The use of essential oils in stress control and relief

3.1.1. Mechanisms of action of essential oils in the nervous system

Essential oils can affect the nervous system through two main pathways: olfactory and cutaneous. Through the olfactory pathway, essential oils are inhaled and reach the olfactory receptors in the nasal mucosa, sending electrical signals to the olfactory bulb. This bulb, in turn, connects to the limbic system, the part of the brain responsible for emotions, memories, mood, learning, and behavior. Thus, essential oils can influence emotional state, stress levels, anxiety, depression, motivation, attention, concentration, creativity, and other psychological aspects. Through the cutaneous pathway, essential oils are applied to the skin, usually diluted in a carrier oil, and penetrate tissues, reaching the bloodstream and organs. Consequently, essential oils can exert physiological effects, such as relaxing or stimulating muscles, nerves, blood vessels, glands, organs, the immune system, the endocrine system, the digestive system, the respiratory system, the reproductive system, and other organic systems [8, 9].

3.1.2. The main essential oils with anti-stress properties

There are several essential oils that have anti-stress properties, but some of the most commonly used and studied ones include: lavender, chamomile, bergamot, ylang-ylang, jasmine, sage, valerian, orange, lemon, geranium, rose, marjoram, vetiver, cedarwood,

sandalwood, frankincense, among others. Each essential oil has a unique chemical composition, determining its therapeutic effects, and an aromatic note, indicating its volatility and persistence [10].

Essential oils can be classified into high, middle, and low notes, where high notes are lighter, refreshing, stimulating, and antidepressant; middle notes are more balanced, harmonizing, calming, and anxiolytic; and low notes are heavier, relaxing, sedative, and hypnotic. Examples of high-note oils include lemon, orange, bergamot, grapefruit, eucalyptus, peppermint, rosemary, and thyme. Lavender, chamomile, geranium, ylang-ylang, jasmine, sage, marjoram, and tea tree are notable middle-note oils, while valerian, vetiver, cedarwood, sandalwood, frankincense, patchouli, and myrrh fall into the low-note category. High-note essential oils are recommended for combating stress caused by fatigue, lack of motivation, apathy, depression, lack of concentration, memory, and creativity issues, as they help revitalize, energize, uplift, cheer, clarify, stimulate, and awaken the mind and body [11]. They can also assist in detoxification, immunity, digestion, respiration, circulation, and infection prevention. Examples of how to use high-note essential oils include:

- Inhale the scent of lemon, orange, or bergamot in the morning to start the day with more energy, optimism, and confidence;
- Drop a few drops of eucalyptus, mint, or rosemary into a diffuser, an air freshener, or a tissue, and breathe deeply to relieve fatigue, drowsiness, headache, and nasal congestion;
- Massage the temples, neck, shoulders, and back with a carrier oil mixed with grapefruit, thyme, or tea tree to stimulate circulation, eliminate toxins, strengthen the immune system, and prevent flu and colds [12, 13].

Middle-note essential oils are recommended for combating stress caused by anxiety, nervousness, anguish, fear, panic, phobia, irritability, anger, aggression, impatience, frustration, insecurity, low self-esteem, guilt, pessimism, among others, as they help calm, relax, balance, harmonize, tranquilize, comfort, console, and pacify the mind and body. They can also assist in hormonal regulation, healing, inflammation, pain relief, insomnia, PMS, menopause, and sexuality. Some examples of how to use middle-note essential oils are:

- Inhale the scent of lavender, chamomile, or geranium in moments of tension, anxiety, nervousness, fear, or anger to reduce stress, blood pressure, heart rate, and respiratory rate, inducing a state of relaxation, peace, and well-being;
- Drop a few drops of ylang-ylang, jasmine, or sage into a diffuser, an air freshener, or a pillow, and breathe deeply before bedtime to facilitate sleep, alleviate nightmares, improve mood, self-esteem, self-confidence, and sexuality;
- Massage the abdomen, chest, breasts, arms, and legs with a carrier oil mixed with marjoram, rose, or geranium to relieve cramps, swelling, pain, mood swings, hot flashes, and other symptoms of PMS and menopause [13, 14].

Low-note essential oils are recommended for combating stress caused by insomnia, restlessness, hyperactivity, difficulty relaxing, letting go, surrendering, connecting, expressing, feeling, loving, forgiving, healing, liberating, transforming, and transcending, as they help sedate, comfort, envelop, protect, nurture, embrace, caress, love, forgive, heal, liberate, transform, and transcend the mind and body. They can also assist in meditation, prayer, contemplation, introspection, reflection, intuition, inspiration, creativity, spirituality, and transcendence. Some examples of how to use low-note essential oils are:

- Inhale the scent of valerian, vetiver, or cedarwood in moments of insomnia, restlessness, hyperactivity, or difficulty relaxing, to induce deep, restorative sleep and physical, mental, and emotional relaxation;
- Drop a few drops of sandalwood, frankincense, or patchouli into a diffuser, an air freshener, or an aromatherapy necklace and breathe deeply during meditation, prayer, contemplation, introspection, reflection, intuition, inspiration, creativity, spirituality, or transcendence, to facilitate contact with the inner self, the higher self, the divine, the sacred, the infinite, the eternal, the absolute;
- Massage the heart, solar plexus, sacral, coccyx, base of the spine, coccyx, perineum, feet, hands, ears, head, with a carrier oil mixed with myrrh, sandalwood, or frankincense, to balance, harmonize, activate, unblock, cleanse, purify, energize, illuminate, expand, elevate, the chakras, meridians, nadis, energy fields, subtle bodies, aura, kundalini, consciousness [12-14].

3.1.3. How to choose, blend, and apply essential oils for stress?

To choose the most suitable essential oils for stress, it is important to consider the type, cause, intensity, duration, and symptoms of stress, as well as personal preferences, sensitivity, tolerance, compatibility, and the availability of essential oils. A simple and practical way to choose essential oils is to follow intuition, instinct, taste, smell, attraction, repulsion, emotion, sensation, reaction, the response that each essential oil evokes in each person. Another way is to consult an aromatherapist, a book, a website, an app, a chart, a guide, a manual, a recipe, a recommendation, a reference, a source that provides information on the properties, indications, contraindications, precautions, dosages, forms of use, benefits, effects, results of essential oils [8, 15].

To blend essential oils, it is important to respect the synergy, affinity, complementarity, harmony, potentiation, modulation, balance, personalization, creativity, diversity, originality, singularity, identity, essence of each essential oil and each person. A simple and practical way to combine essential oils is to follow the rule of aromatic notes, which involves mixing essential oils of different notes that blend well together, creating a pleasant, balanced, and lasting aroma. A common ratio is to use 30% high-note essential oils, 50% middle-note essential oils, and 20% low-note essential oils. Another way is to consult an aromatherapist, a book, a website, an app, a chart, a guide, a manual, a recipe, a recommendation, a reference, a source that provides information on synergies, blends, compositions, formulas, recipes, blends, perfumes, aromas of essential oils [17].

To apply essential oils, it is important to respect the route, form, method, location, time, frequency, quantity, quality, safety, effectiveness, efficiency, convenience, practicality, simplicity, ease of each essential oil and each person. A simple and practical way to apply essential oils is to use a diffuser, an air freshener, a humidifier, a vaporizer, a nebulizer, a spray, a tissue, cotton, a necklace, a pendant, an earring, a ring, a bracelet, a watch, a keychain, a sachet, a candle, a lamp, a filter, a purifier, an air freshener, a deodorizer, an odorizer, a perfume, an aroma that allows inhaling the aroma of essential oils in the environment, car, bedroom, bathroom, office, living room, kitchen, garden, balcony, balcony, pool, gym, school, work, leisure, rest, relaxation, meditation, prayer, contemplation, introspection, reflection, intuition, inspiration, creativity, spirituality, transcendence [18].

There is a variety of products, such as vegetable oils, creams, gels, soaps, shampoos, conditioners, among others, that allow the application of essential oils in various parts of the body. These areas include skin, hair, nails, lips, eyes, ears, nose, mouth, throat, as well as internal organs such as heart, liver, kidneys, among others. The application ranges from external regions, such as arms and legs, to more specific areas, such as chakras, meridians, energy fields, subtle bodies, aura, and even consciousness. In summary, these items have significant versatility in promoting well-being and care in various parts of the body, both physical and energetic [16-18].

4. Conclusion

In conclusion, the review comprehensively addresses the causes and consequences of stress, highlighting the complexity of the body's response to challenging situations. Stress can manifest acutely or chronically, impacting both the body and the mind, contributing to a variety of physical and mental health conditions. By exploring the clinical implications of stress, the importance of a personalized and multidisciplinary approach in managing this condition is emphasized. Clinical strategies, such as cognitive-behavioral therapies, pharmacological interventions, when necessary, relaxation techniques, and lifestyle changes, are presented as crucial components to mitigate the negative impacts of stress on an individual's overall health.

The second part of the review focuses on the use of essential oils as a complementary approach for stress control and relief. The mechanisms of action of essential oils on the nervous system are discussed, highlighting the olfactory and cutaneous pathways. The review also emphasizes the key essential oils with anti-stress properties, categorizing them based on their aromatic notes. By providing practical guidance on how to choose, blend, and apply essential oils, the review underscores the importance of considering individual preferences and the diversity of responses to different aromas. Specific strategies for each type of oil, along with usage examples, are presented, offering readers a useful guide to incorporating these practices into their daily lives.

Ultimately, the review not only highlights the complexity of stress and its clinical ramifications but also the diversity of approaches available for managing this condition. The combination of clinical interventions and complementary therapies, such as the use of essential oils, underscores the importance of a holistic approach in promoting physical and mental well-being in the face of life's stressful challenges.

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