



Essential Oil Studies Women's Health / Flower Oils

Ylang Ylang

Planta Med. 2004 Jul;70(7):632-6.

Evaluation of the harmonizing effect of ylang-ylang oil on humans after inhalation.

Hongratanaworakit T¹, Buchbauer G.

Abstract

Scientific evaluations of the effects of fragrances on humans are rather scarce. The aim of this investigation was to study the effects of ylang-ylang oil (*Cananga odorata*, Annonaceae) on human physiological parameters and self-evaluation. Twenty-four healthy volunteers participated in the experiments. Fragrances were administered by inhalation. Physiological parameters recorded were skin temperature, pulse rate, breathing rate and blood pressure. Self-evaluation was assessed in terms of alertness, attentiveness, calmness, mood, relaxation and vigor. Additionally, fragrances were rated in terms of pleasantness, intensity and effect. The present investigation showed that ylang-ylang oil may be characterized by the concept of "harmonization" rather than relaxation/sedation. Compared to an odorless placebo, ylang-ylang oil caused significant decreases in blood pressure and pulse rate as well as significant increases of subjective attentiveness and alertness. Correlational analyses revealed that the observed effects are mainly due to a subjective odor experience.

Phytother Res. 2006 Sep;20(9):758-63.

Relaxing effect of ylang ylang oil on humans after transdermal absorption.

Hongratanaworakit T¹, Buchbauer G.

Abstract

The aim of this study was to investigate the effects of ylang ylang oil (*Cananga odorata*, Annonaceae) on human physiological parameters and self-evaluation after transdermal absorption. Forty healthy volunteers participated in the experiments. Physiological parameters recorded were skin temperature, pulse rate, breathing rate and blood pressure. Self-evaluation was assessed by means of visual analog scales (VAS). The

ylang ylang oil caused a significant decrease of blood pressure and a significant increase of skin temperature. At the behavioral level, subjects in the ylang ylang oil group rated themselves more calm and more relaxed than subjects in the control group. These findings are likely to represent a relaxing effect of the ylang ylang oil and provide some evidence for the usage of the ylang ylang oil in aromatherapy such as causing a relief of depression and stress in humans.

Int J Neurosci. 2008 Jan;118(1):59-77.

Modulation of cognitive performance and mood by aromas of peppermint and ylang-ylang.

Moss M¹, Hewitt S, Moss L, Wesnes K.

Abstract

This study provides further evidence for the impact of the aromas of plant essential oils on aspects of cognition and mood in healthy participants. One hundred and forty-four volunteers were randomly assigned to conditions of ylang-ylang aroma, peppermint aroma, or no aroma control. Cognitive performance was assessed using the Cognitive Drug Research computerized assessment battery, with mood scales completed before and after cognitive testing. The analysis of the data revealed significant differences between conditions on a number of the factors underpinning the tests that constitute the battery. Peppermint was found to enhance memory whereas ylang-ylang impaired it, and lengthened processing speed. In terms of subjective mood peppermint increased alertness and ylang-ylang decreased it, but significantly increased calmness. These results provide support for the contention that the aromas of essential oils can produce significant and idiosyncratic effects on both subjective and objective assessments of aspects of human behavior. They are discussed with reference to possible pharmacological and psychological modes of influence.

Rose

Nat Prod Commun. 2009 Feb;4(2):291-6.

Relaxing effect of rose oil on humans.

Hongratanaworakit T¹.

Abstract

One increasingly popular type of alternative therapy is aromatherapy, but scientific validation in this field is still rare. The aim of this study was to investigate the effect of rose oil (*Rosa damascena* Mill, Rosaceae) on human autonomic parameters and emotional responses in healthy subjects after transdermal absorption. In order to exclude any olfactory stimulation the inhalation of the fragrances was prevented by breathing masks. Forty healthy volunteers participated in the experiments. Five

autonomic parameters, i.e. blood pressure, breathing rate, blood oxygen saturation, pulse rate, and skin temperature, were recorded. Emotional responses were assessed by means of rating scales. Compared to placebo, rose oil caused significant decreases of breathing rate, blood oxygen saturation and systolic blood pressure, which indicate a decrease of autonomic arousal. At the emotional level, subjects in the rose oil group rated themselves as more calm, more relaxed and less alert than subjects in the control group. These findings are likely to represent a relaxing effect of the rose oil and provide some evidence for the use of rose oil in aromatherapy, such as causing relief of depression and stress in humans.

Burns. 2016 Aug 26. pii: S0305-4179(16)30186-3. doi: 10.1016/j.burns.2016.06.014.

Comparing the effects of aromatherapy massage and inhalation aromatherapy on anxiety and pain in burn patients: A single-blind randomized clinical trial.

Seyyed-Rasooli A¹, Salehi F², Mohammadpoorasl A³, Goljaryan S⁴, Seyyedi Z⁵, Thomson B⁶.

Abstract

BACKGROUND:

Anxiety and pain are recognized as major problems of burn patients; because pharmaceutical treatments for controlling anxiety and pain symptoms lead to complications and an increase in health costs, nonpharmacological nursing interventions were considered for this group of patients. This led to the present study aimed at comparing the effect of aromatherapy massage with inhalation aromatherapy for anxiety and pain in burn patients.

METHODS:

This single-blind clinical trial was carried out on 90 patients with burns <20%. Patients were randomly assigned to one of three groups, namely aromatherapy massage, inhalation aromatherapy, and control group. The patients assigned to the aromatherapy massage group received a massage for half an hour using a blend of lavender and almond oils, while a blend of rose and lavender aroma was used for the inhalation aromatherapy group. Spielberger State Anxiety Inventory was used for measuring anxiety and the visual analog scale (VAS) scale was used for measuring pain.

RESULTS:

The results showed that three groups were equal in terms of demographics, disease characteristics, and scores of anxiety and pain at the baseline. The mean decreases of anxiety scores were -0.04 ± 5.08 , 6.33 ± 12.55 , and 6.43 ± 10.60 in the control group, aromatherapy massage group, and inhalation group, respectively ($p=0.007$). The mean decrease of pain scores were -0.10 ± 0.96 , 1.70 ± 1.84 , and 0.97 ± 1.56 in the control group, aromatherapy massage group, and inhalation group, respectively ($p<0.001$).

CONCLUSION:

The study results showed the positive effect of aromatherapy massage and inhalation aromatherapy compared with the control group in reducing both anxiety and pain of burn patients. Therefore, both interventions, which are inexpensive, and noninvasive nursing tasks can be proposed for alleviating anxiety and pain of burn patients.

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Complement Ther Clin Pract. 2016 Aug;24:45-9. doi: 10.1016/j.ctcp.2016.05.002. Epub 2016 May 7.

Investigating the effect of rose essential oil in patients with primary dysmenorrhea.

Uysal M¹, Doğru HY², Sapmaz E³, Tas U¹, Çakmak B², Ozsoy AZ², Sahin F⁴, Ayan S⁵, Esen M⁴.

Abstract**OBJECTIVE:**

This study aimed to evaluate the effects of rose essential oil on primary dysmenorrhea.

METHODS:

One hundred patients were randomly divided into two groups; Group D received diclofenac sodium (75 mg/im) and Group A administered diclofenac sodium with aromatherapy (2% rose essential oil). The visual analog scale (VAS) scores in all subjects at baseline, 10th min, and 30th min were recorded.

RESULTS:

When the two groups were compared before and after the treatment, there were significant decreases in VAS values at the 10 min and 30 min compared to baseline values in both groups ($p < 0.001$). However, the 30th min mean VAS value in Group D was higher than in Group A ($p = 0.019$).

CONCLUSION:

The present study suggests that aromatherapy with rose essential oil, which is a nonpharmacologic treatment method, as an adjuvant to conventional treatment methods may be beneficial for pain relief in individuals with primary dysmenorrhea.

Iran Red Crescent Med J. 2014 Aug 17;16(9):e14455. doi: 10.5812/ircmj.14455. eCollection 2014.

Comparing the effects of aromatherapy with rose oils and warm foot bath on anxiety in the first stage of labor in nulliparous women.

Kheirkhah M¹, Vali Pour NS¹, Nisani L¹, Haghani H¹.

Abstract

BACKGROUND:

Anxiety is the most common emotional response in women during delivery, which can be accompanied with adverse effects on fetus and mother.

OBJECTIVES:

This study was conducted to compare the effects of aromatherapy with rose oil and warm foot bath on anxiety in the active phase of labor in nulliparous women in Tehran, Iran.

PATIENTS AND METHODS:

This clinical trial study was performed after obtaining informed written consent on 120 primigravida women randomly assigned into three groups. The experimental group 1 received a 10-minute inhalation and footbath with oil rose. The experimental group 2 received a 10-minute warm water footbath. Both interventions were applied at the onset of active and transitional phases. Control group, received routine care in labor. Anxiety was assessed using visual analogous scale (VASA) at onset of active and transitional phases before and after the intervention. Statistical comparison was performed using SPSS software version 16 and $P < 0.05$ was considered significant.

RESULTS:

Anxiety scores in the intervention groups in active phase after intervention were significantly lower than the control group ($P < 0.001$). Anxiety scores before and after intervention in intervention groups in transitional phase was significantly lower than the control group ($P < 0.001$).

CONCLUSIONS:

Using aromatherapy and footbath reduces anxiety in active phase in nulliparous women.

Complement Ther Med. 2014 Dec;22(6):1027-31. doi: 10.1016/j.ctim.2014.09.003. Epub 2014 Sep 28.

Effects of olfactory stimulation with rose and orange oil on prefrontal cortex activity.

Igarashi M¹, Ikei H¹, Song C¹, Miyazaki Y².

Abstract

OBJECTIVES:

People have been aware of essential oils, which are derived from plants, for a long time. Recently, we have become interested in physiological and subjective effects of daily exposure to essential oils. The primary aim of the present study was to clarify effects of olfactory stimulation with rose or orange oil on prefrontal cortex activity; subjective evaluations of relaxation were also determined.

SETTING AND INTERVENTIONS:

Subjects were exposed for 90s to air impregnated with either rose or orange essential oil. As a control, subjects wore the same device but inhaled only unimpregnated air. The three stimuli were randomly presented to each subject.

MAIN OUTCOME MEASURES:

Physiological effects were determined by near-infrared time-resolved spectroscopy and a modified semantic differential approach was used to determine subjective evaluations.

RESULTS:

The study participants were 20 female university students (mean age 22.5 ± 1.6 years). Olfactory stimulation by rose or orange oil induced: (1) a significant decrease in oxyhemoglobin concentration in the right prefrontal cortex and (2) an increase in "comfortable," "relaxed," and "natural" feelings.

CONCLUSION:

These findings indicate that olfactory stimulation by rose or orange oil induces physiological and psychological relaxation.

J Altern Complement Med. 2014 Sep;20(9):727-31. doi: 10.1089/acm.2014.0029. Epub 2014 Jul 23.

Effect of olfactory stimulation by fresh rose flowers on autonomic nervous activity.

Igarashi M¹, Song C, Ikei H, Ohira T, Miyazaki Y.

Abstract**OBJECTIVE:**

To clarify the effect of olfactory stimulation by fresh rose flowers, which exude a strong fragrance, on heart rate variability.

SETTINGS:

A chamber with an artificial climate maintained at 25°C with 50% relative humidity and 230 lux illumination at the Center for Environment, Health, and Field Sciences, Chiba University, Japan.

PARTICIPANTS:

Nineteen female university and graduate students (mean age, 21.6 ± 1.5 years; age range, 19.0-26.0 years).

INTERVENTIONS:

Fresh rose flowers as an olfactory stimulant, with air as a control.

OUTCOME MEASURES:

Heart rate variability and subjective evaluations. The power levels of the high-frequency (HF) (0.15-0.40 Hz) and low-frequency (LF) (0.04-0.15 Hz) components of heart rate variability were calculated by the maximum-entropy method. The HF power was considered to reflect parasympathetic nervous activity. The LF/HF power ratio was

determined to reflect the sympathetic nervous activity. A modified semantic differential method was used to perform subjective evaluations.

RESULTS:

Fresh rose flowers induced (1) a significant increase in parasympathetic nervous activities and (2) an increase in "comfortable" and "natural" feelings.

CONCLUSION:

The findings indicated that olfactory stimulation by fresh rose flowers induced physiological and psychological relaxation.

Complement Ther Clin Pract. 2014 Aug;20(3):159-63. doi: 10.1016/j.ctcp.2014.05.001. Epub 2014 May 14.

Effect of Rosa damascene aromatherapy on sleep quality in cardiac patients: a randomized controlled trial.

Hajibagheri A¹, Babaii A², Adib-Hajbaghery M³.

Abstract

OBJECTIVE:

Sleep disorders are common among patients hospitalized in coronary care unit (CCU). This study aimed to investigate the effect of Rosa damascene aromatherapy on sleep quality of patients hospitalized in CCU.

METHODS:

In this randomized controlled trial, 60 patients who met the inclusion criteria were conveniently sampled and randomly allocated to the experimental and control groups. Patients in the control group received routine care. In the experimental group, patients received routine care and Rosa damascene aromatherapy for three subsequent nights. In the both groups the sleep quality was assessed using the Pittsburgh Sleep Quality Index.

RESULTS:

After the study, the mean scores of five domains of Pittsburg Sleep Quality Index as well as the mean of total score of the index in the experimental group were significantly lower than the control group.

CONCLUSION:

Rosa damascene aromatherapy can significantly improve the sleep quality of patients hospitalized in CCUs.

Complement Ther Clin Pract. 2012 Aug;18(3):164-8. doi: 10.1016/j.ctcp.2012.05.002. Epub 2012 Jun 27.

The effects of clinical aromatherapy for anxiety and depression in the high risk postpartum woman - a pilot study.

Conrad P¹, Adams C.

Abstract

OBJECTIVES:

The aim of this study was to determine if aromatherapy improves anxiety and/or depression in the high risk postpartum woman and to provide a complementary therapy tool for healthcare practitioners.

DESIGN:

The pilot study was observational with repeated measures.

SETTING:

Private consultation room in a Women's center of a large Indianapolis hospital.

SUBJECTS:

28 women, 0-18 months postpartum.

INTERVENTIONS:

The treatment groups were randomized to either the inhalation group or the aromatherapy hand m'technique. Treatment consisted of 15 min sessions, twice a week for four consecutive weeks. An essential oil blend of rose otto and lavandula angustifolia @ 2% dilution was used in all treatments. The non-randomized control group, comprised of volunteers, was instructed to avoid aromatherapy use during the 4 week study period. Allopathic medical treatment continued for all participants.

OUTCOME MEASUREMENTS:

All subjects completed the Edinburgh Postnatal Depression Scale (EPDS) and Generalized Anxiety Disorder Scale (GAD-7) at the beginning of the study. The scales were then repeated at the midway point (two weeks), and at the end of all treatments (four weeks).

RESULTS:

Analysis of Variance (ANOVA) was utilized to determine differences in EPDS and/or GAD-7 scores between the aromatherapy and control groups at baseline, midpoint and end of study. No significant differences were found between aromatherapy and control groups at baseline. The midpoint and final scores indicated that aromatherapy had significant improvements greater than the control group on both EPDS and GAD-7 scores. There were no adverse effects reported.

CONCLUSION:

The pilot study indicates positive findings with minimal risk for the use of aromatherapy as a complementary therapy in both anxiety and depression scales with the postpartum woman. Future large scale research in aromatherapy with this population is recommended.

Jasmine

Nat Prod Commun. 2010 Jan;5(1):157-62.

Stimulating effect of aromatherapy massage with jasmine oil.

Hongratanaworakit T¹.

Abstract

The aim of this study was to investigate the effect of aromatherapy massage with jasmine oil (*Jasminum sambac* L., Oleaceae) on humans. Human autonomic parameters, i.e. blood pressure, pulse rate, blood oxygen saturation, breathing rate, and skin temperature, were recorded as indicators of the arousal level of the autonomic nervous system. In addition, subjects had to rate their emotional condition in terms of relaxation, vigor, calmness, attentiveness, mood, and alertness in order to assess subjective behavioral arousal. Forty healthy volunteers participated in the experiments. Jasmine oil was applied topically to the skin of the abdomen of each subject. Compared with placebo, jasmine oil caused significant increases of breathing rate, blood oxygen saturation, and systolic and diastolic blood pressure, which indicated an increase of autonomic arousal. At the emotional level, subjects in the jasmine oil group rated themselves as more alert, more vigorous and less relaxed than subjects in the control group. This finding suggests an increase of subjective behavioral arousal. In conclusion, our results demonstrated the stimulating/activating effect of jasmine oil and provide evidence for its use in aromatherapy for the relief of depression and uplifting mood in humans.

Jasmine flowers and fragrance inhibits lactation.

Placing flowers of *Jasminum pubescens* on the mammary glands causes milk production to almost stop; using the fragrance only reduces milk production. The mechanism is postulated to be olfactory pathway to the hypothalamus and subsequent inhibitory effect on the pituitary gland.

(Inhibiting effect of jasmine flowers on lactation. Abraham M, Devi N S, Sheela R; Indian Journal of Medical Research)

The application of *Jasminum sambac* flowers to the breasts produced a significant reduction in serum prolactin. It was postulated that both tactile and olfactory stimuli of the flowers were responsible for suppression of lactation and that the olfactory route mediated suppression of serum prolactin.

(Suppression of puerperal lactation using jasmine flowers (*Jasminum sambac*).

Shrivastav P, George K, Balasubramaniam N, Jasper M P, Thomas M, Kanagasabhapathy A S Australia & New Zealand Journal of Obstetrics & Gynaecology)

Jasmine produces mentally stimulating effects

Inhalation of lavender oil significantly increased decision time but had no effect on motor time, indicating that the sedative effect was a central one and not peripheral. Lavender

significantly increased reaction times and jasmine significantly decreased them compared to the conditions in which no substance was inhaled. The results clearly proved the sedative influence of lavender and the excitatory effect of jasmine on behavior.

Excitatory and sedative effects of essential oils on human reaction time performance.
Karamat E, Ilmberger J, Buchbauer G, Robhuber K, Rupp C

Jasmine reduces sleeping time

The effect of jasmine oil and its components on the sleeping time of mice was investigated. *Cis*- and *trans*-phytol were found to shorten the sleeping time to 72%, and were therefore considered to be the stimulant-like components in the oil.

(Stimulant-like ingredients in absolute jasmine. Kikuchi A, Tsuchiya T, Tanida M, Uenoyama S, Nakayama)

Jatamansi

Different levels of valepotriates according to species and location

The contents of three valepotriates in *Valeriana jatamansi* Jones, *V. officinalis* L. and *V. officinalis* var. *latifolia* Miq. were different. Among them, that of *Valeriana jatamansi* Jones was the highest. The contents of three valepotriates in *Valeriana jatamansi* Jones varied significantly from different areas, samples collected from Longli of Guizhou province ranking the highest. The contents of three valepotriates in *V. officinalis* L. also varied significantly from different areas, samples from Liuba of Shaanxi province showing the highest. The results also showed that the contents of three valepotriates in underground part are all higher than that in aerial part.

(Interspecific and intraspecific comparison of valepotriates contents in three *Valeriana* plants; Chen L, Qin L, Zheng H, Nian H, Guo C, Zhang C. School of Pharmacy, Second Military Medical University, Shanghai 200433.)

Jatamansi extract protects against liver damage

A 50% ethanolic extract of the rhizomes of *N. jatamansi* is shown to possess hepatoprotective activity. Pretreatment of rats with the extract for three consecutive days significantly ameliorated the liver damage in rats exposed to the hepatotoxic compound thioacetamide. Elevated levels of serum transaminases (aminotransferases) and alkaline phosphatase, observed in thioacetamide alone treated group of animals, were significantly lowered in *N. jatamansi* pretreated rats. Pretreatment of the animals with the extract also resulted in an increase in survival in rats intoxicated with dose of the hepatotoxic drug.

(Nardostachys jatamansi protects against liver damage induced by thioacetamide in rats.

Ali S, Ansari KA, Jafry MA, Kabeer H, Diwakar G. Department of Biochemistry, Faculty of Science, Hamdard University, -1100 62, New Delhi, India.)

Geranium

Libyan J Med. 2013; 8: 10.3402/ljm.v8i0.22520.

Published online 2013 Oct 7. doi: [10.3402/ljm.v8i0.22520](https://doi.org/10.3402/ljm.v8i0.22520)

PMCID: PMC3793238

Rose geranium essential oil as a source of new and safe anti-inflammatory drugs

Mohamed Nadjib Boukhatem,^{1,2,*} Abdelkrim Kameli,¹ Mohamed Amine Ferhat,³ Fairouz Saidi,² and Maamar Mekarnia⁴

Go to:

Abstract

Background

Since the available anti-inflammatory drugs exert an extensive variety of side effects, the search for new anti-inflammatory agents has been a priority of pharmaceutical industries.

Aims

The aim of the present study was to assess the anti-inflammatory activities of the essential oil of rose geranium (RGEO).

Methods

The chemical composition of the RGEO was investigated by gas chromatography. The major components were citronellol (29.13%), geraniol (12.62%), and citronellyl formate (8.06%). In the carrageenan-induced paw edema, five different groups were established and RGEO was administered orally in three different doses.

Results

RGEO (100 mg/kg) was able to significantly reduce the paw edema with a comparable effect to that observed with diclofenac, the positive control. In addition, RGEO showed a potent anti-inflammatory activity by topical treatment in the method of croton oil-induced ear edema. When the dose was 5 or 10 μ l of RGEO per ear, the inflammation was reduced by 73 and 88%, respectively. This is the first report to demonstrate a significant anti-inflammatory activity of Algerian RGEO. In addition, histological analysis confirmed that RGEO inhibited the inflammatory responses in the skin.

Conclusion

Our results indicate that RGEO may have significant potential for the development of novel anti-inflammatory drugs with improved safety profile.

J Caring Sci. 2015 Jun; 4(2): 135–141.

Published online 2015 Jun 1. doi: [10.15171/jcs.2015.014](https://doi.org/10.15171/jcs.2015.014)

PMCID: PMC4484988

Effect of Inhalation of Aroma of Geranium Essence on Anxiety and Physiological Parameters during First Stage of Labor in Nulliparous Women: a Randomized Clinical Trial

Fahimeh Rashidi Fakari, ¹ Mahbubeh Tabatabaeichehr, ^{1,*} Hossian Kamali, ² Farzaneh Rashidi Fakari, ³ and Maryam Naseri ⁴

Abstract

Introduction: Anxiety increases significantly during labor, especially among nulliparous women. Such anxiety may affect the progress of labor and physiological parameters. The use of essential oils of aromatic plants, or aromatherapy, is a non-invasive procedure that can decrease childbirth anxiety. This study examined the effect of inhalation of the aroma of geranium essential oil on the level of anxiety and physiological parameters of nulliparous women in the first stage of labor.

Methods: In study, was carried out on 100 nulliparous women admitted to Bent al-Hoda Hospital in the city of Bojnord in North Khorasan province of Iran during 2012-2013. The women were randomly assigned to two groups of equal size, one experimental group (geranium essential oil) and one control (placebo) group. Anxiety levels were measured using Spielberger' questionnaire before and after intervention. Physiological parameters (systolic and diastolic blood pressure, respiratory rate, pulse rate) were also measured before and after intervention in both groups. Data analysis was conducted using the x2 test, paired t-test, Mann-Whitney U test, and Wilcox on test on SPSS 11.5.

Results: The mean anxiety score decreased significantly after inhalation of the aroma of geranium essential oil. There was also a significant decrease in diastolic blood pressure.

Conclusion: Aroma of essential oil of geraniums can effectively reduce anxiety during labor and can be recommended as a non-invasive anti-anxiety aid during childbirth.

Adv Pharm Bull. 2014 Dec; 4(Suppl 2): 511–514.

Published online 2014 Dec 31. doi: [10.5681/apb.2014.075](https://doi.org/10.5681/apb.2014.075)

PMCID: PMC4312398

Antimicrobial and Antifungal Activity of *Pelargonium roseum* Essential Oils

Gâlea Carmen ¹ and Gabriel Hancu ^{2,*}

Abstract

Purpose: The antiseptic qualities of aromatic and medicinal plants and their extracts have been recognized since antiquity, while attempts to characterize these properties in the laboratory date back the beginning of the XXth century. In the current study essential

oils obtained from *Pelargonium roseum* (Geraniaceae) were analyzed for their antibacterial and antifungal activities.

Methods: The antimicrobial activity of the *Pelargonium* essential oil was tested against Gram-negative bacteria (*Pseudomonas aeruginosa*, *Proteus mirabilis*, *Escherichia coli*), Gram-positive bacteria (*Staphylococcus aureus*, *Enterococcus faecalis*) and fungi (*Candida albicans*). Disc diffusion method was used to study antimicrobial activity.

Results: Inhibition zones showed that the studied essential oils were active against all of the studied bacteria. In the case of *Candida albicans*, the complete inhibition of the fungus's development was observed. In the cases of *Pseudomonas aeruginosa* and *Staphylococcus aureus* we observed an inhibition comparable to that obtained by the use of an appropriate antimicrobial substance.

Conclusion: The volatile oils exhibited considerable inhibitory effects against all the organisms under test, in some cases comparable with those of the reference antibiotics. There were no considerable differences between the antimicrobial activities of the oil obtained by distillation and commercially available *Pelargonium* oils.

Dent Res J (Isfahan). 2011 Dec; 8(Suppl1): S105–S108.

PMCID: PMC3556280

Clinical evaluation of the essential oil of *Pelargonium graveolens* for the treatment of denture stomatitis

Ali Mohammad Sabzghabae¹, Zahra Shirdare¹, Behnaz Ebadian², Abolfazl Aslani³ and Alireza Ghannadi⁴

Abstract

Background:

Natural products are proved to play a good role as an alternative to synthetic chemicals in clinical conditions. Previous studies showed that *Pelargonium graveolens* has anti-inflammatory and antifungal activity against *Candida albicans*. The aim of this study was to evaluate the efficacy of essential oil of *Pelargonium graveolens* in the treatment of denture stomatitis.

Materials and Methods:

In this double-blind randomized clinical trial conducted in Isfahan (Iran), 80 (51 females and 29 males) eligible wearers of complete denture were included. According to the patients' profiles number, they randomly divided to 2 groups of 40 patients' case and 40 patients control treated with *Pelargonium* 1% gel or placebo, respectively. They were recommended to apply the gel twice daily for a 14-day course. All data were analyzed using SPSS® for windows (v.18). We have used the χ^2 test for analyzing qualitative and Student *t*-test for quantitative data considering as $P < 0.05$ as significant.

Results:

According to mycological data and clinical observation after treatment in the case group, 34% of patients had been improved completely, 56% partially and 10% had no improvement. In the control group, 5% of patients had complete recovery, 25% partial recovery, and 70% no improvement. A significant reduction in fungal growth was observed in case group rather than the control group (P value<0.0001).

Conclusion:

It seems that the application of a 1% Geranium oil topical gel formulation is more effective than placebo in the treatment of denture stomatitis.

Keywords: *Candida albicans*, denture stomatitis, *Pelargonium graveolens*

INTRODUCTION

Denture stomatitis, more commonly known as denture sore mouth, is an erythematous condition involving the mucosa of the hard palate in complete denture wearers.[1] Its clinical features include a diffuse or patchy redness of the palate under a denture and confined to the area covered by the denture.[2] This condition is usually asymptomatic, but can be associated with burning, bleeding, and unpleasant taste or halitosis.[3] The involvement of *Candida* spp. as a potential causative agent in denture stomatitis is previously described and *Candida albicans* remains the most frequent isolated yeast in the oral cavity. *Candida*-associated denture stomatitis is observed in approximately 11-67% of denture wearers.[4]