



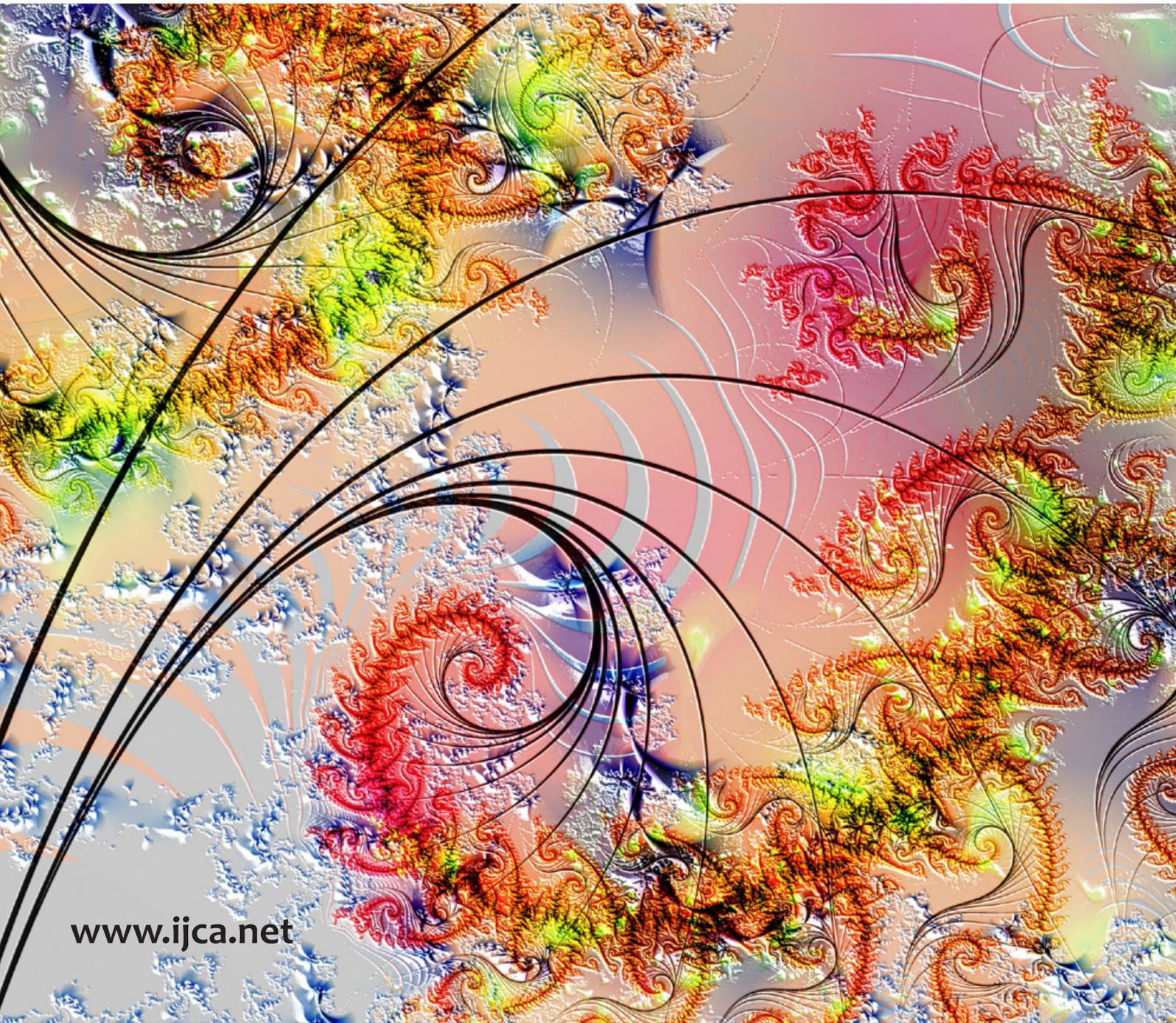
2016 | Volume 11 | Issue 2
Digestive System Disorders
ISSN 1961-7623

INTERNATIONAL JOURNAL OF **clinical aromatherapy**

Editor: Rhiannon Lewis ♦ Associate Editor: Gabriel Mojay

A unique resource for enhancing clinical practice
Written by practitioners for practitioners

www.ijca.net





CONTENTS

Editorial

Rhiannon Lewis	1
Essential oil monograph: Cinnamon – delicious culinary spice; potent aromatic antibiotic Gabriel Mojay	2
Intestinal dysbiosis and essential oils: towards promoting a healthy gut microflora Interview with Dr Jason A Hawrelak	13
<i>Clostridium difficile</i> infection in the clinical setting: challenges and potential aromatic solutions Rhiannon Lewis	18
The potency of herbal components for prophylaxis or treatment of candidiasis caused by <i>Candida albicans</i>, a member of the gastrointestinal flora Sanae A. Ishijima	32
Cancer-related fatigue: the potential of aromatherapy Carol Rose	39
Practically relevant stress relieving effects of olfactory stimuli delivered by a specially formulated odour inhaler (AromaStick®) Nick Singer and Rainer Schneider	48
Conference report: botanica2016 – bridging the worlds of herbal medicine and clinical aromatherapy Trish Hart	59
Book reviews Rhiannon Lewis	63

Rédaction/Publication:

Essential Oil Resource Consultants EURL
Chemin des Achaps
83840 La Martre
FRANCE
Tel/fax: (+33) 483 11 87 03

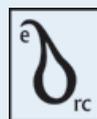
Rédactrice/Editor: Rhiannon Harris Lewis

Email: editor@ijca.net

Depot legal: à parution

ISSN: 1961-7623

Cover image: copyright © 2016 Pascal Duvet
www.pascal-duvet-photographie.com



an
essential oil resource consultants
publication

Disclaimer

The Publisher cannot accept responsibility for any injury or mishap to persons or property from the use of any methods, products, instructions or ideas referred to within this publication. The views expressed in the IJCA are not necessarily those of the Publisher or members of the Editorial Board.

Advertising

Advertising enquiries should be addressed to the Editor. Although all advertising material is expected to conform to ethical standards, and inclusion in this publication does not constitute guarantee or endorsement of the quality or value of such product or of the claims made of it by the manufacturer. The Publisher reserves the right to refuse any advertising that is considered inappropriate.

Copyright © 2016 Essential Oil Resource Consultants EURL

No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form, or by any means, electronic, mechanical, photocopying or otherwise, without prior written permission of the Publisher.

Cancer-related fatigue: the potential of aromatherapy

Carol Rose

Clinical Aromatherapist, RMT
The Aromary, Kerikeri, New Zealand
carol@thearomary.co.nz

Cancer-related fatigue (CRF) possesses the greatest negative impact upon a patient's quality of life during all phases of the cancer experience (Macmillan Practice Development Unit, 1997), even after completion of curative cancer treatment (Hofman et al, 2007). Despite its prevalence, the underlying mechanisms are largely unknown, interventions are relatively sparse and the debilitating experience of CRF is often not fully appreciated by healthcare professionals, resulting in a symptom that is largely undertreated (Curt et al, 2000).

Aromatherapy offers plausible potential as a complementary intervention, particularly in the management of the key psychological indicators of cancer-related fatigue. However, current studies specific to the aromatic management of this complex symptom are limited. In order to strengthen therapeutic outcomes and clinical evidence, it is vital that we, as aromatherapists, have a comprehensive understanding of CRF, the gaps which currently exist and how these can be addressed. This paper will explore these issues and raise several points specific to clinical aromatherapy with the intention of increasing integration of aromatic approaches for patients suffering the fatigue of cancer.

Introduction

Qualitative studies have identified that cancer-related fatigue (CRF) is consistently reported by patients as one of their most distressing symptoms, negatively impacting their daily routine and quality of life more than any other cancer-related symptom including, pain, depression and nausea (Curt et al, 2000). Patients differentiate their fatigue as being more rapid in onset, more debilitating, intense and severe, as well as being unrelenting in nature and duration when compared with the fatigue of healthy individuals (Mustian et al, 2007; Lane, 2005). Their descriptions include, *“feeling listless, sluggish, faint, despondent, apathetic, tired, slack, indifferent and having paralysing fatigue”* (Ahlberg et al, 2003) which is unrelieved by rest and sleep (Glaus, 1993).

Possible causes of CRF

Despite its prevalence and the wealth of studies investigating fatigue in the general cancer population, the underlying mechanisms remain largely unknown. To date, possible causes of CRF can be categorised as physiological, treatment-related and psychological.

1. Physiological factors

This is arguably the most well-researched area, with an array of associated physiological causes including anaemia, cachexia, tumour burden and the release of cytokines (Ahlberg et al, 2003). Evidence is mounting in support of immune dysfunction, abnormal cortisol levels, increased body mass index and metabolic syndrome as other possible causative factors (Mitchell, 2010).

2. Treatment-related factors

Relationships between CRF and chemotherapy, radiotherapy, biological therapies and combined treatment modalities have been consistently demonstrated (Mustian et al, 2007). Patients receiving chemotherapy report rising levels of fatigue which, on average, peak 4-5 days after completion of a treatment cycle, then gradually decrease over time but never return to the pre-treatment level (Hofman et al, 2007). Fatigue is also reported as the most common and severe symptom of radiotherapy treatment, the intensity of which has been shown to rise steadily over the entire course of treatment (Mustian et al, 2007).

Regardless of which treatment is received, patients anticipate their fatigue will return to pre-diagnostic levels once treatment has ceased. However, there is increasing evidence to the contrary. Hofman et al (2007) cites a large scale study of 763 women who received curative breast cancer treatment, of which 35% reported increased fatigue up to 5 years after treatment completion. Unfortunately, there is still little known about how or why certain treatments induce fatigue or the long-term implications it holds for patients.

3. Psychological factors

The presence of emotional distress and altered mood states including anxiety, depression, insomnia and chronic stress are consistently associated with CRF (Ahlberg et al, 2003). The mental effort required by patients to cope with the emotional impact of a cancer diagnosis, an uncertain future and often, overwhelming amounts of information regarding their illness and related treatment, may impair memory and the ability to concentrate (Cimprich, 1992). Furthermore, its intensity alters significant aspects of a person's life, impacting role function, family dynamics and their ability to work (Curt et al, 2000), creating a sense of loss and impairing coping abilities (Pearce and Richardson, 1996), as well as causing spiritual distress (Potter, 2004).

CRF is thus multi-factorial, involving complex interactions between and within each of these three causal categories. And yet, in terms of clinical presentation, there is "*significant individual variability*" among patients (Mitchell, 2010), making

it impossible to determine a single intervention which will offer relief for the majority of patients.

Current orthodox interventions

Regardless of the growing interest within healthcare about CRF, patients report that they are seldom asked about their fatigue experience which, as a consequence, remains largely undertreated (Curt et al, 2000). Mitchell (2010) attributes this gap in treatment to both clinicians and patients. Clinicians may not fully appreciate its debilitating effects and consequently do not offer interventions. Conversely, many patients regard fatigue as an unavoidable symptom of their cancer and treatment which may negate any discussion. This is further compounded by the word 'fatigue' being unfamiliar terminology to some patients who tend to use metaphors to describe how they feel (Lane, 2003). In addition, patients are often unaware that interventions even exist and for those that do, Mitchell (2010) reports that their preference is for a non-pharmacological approach.

To assist healthcare professionals, the National Comprehensive Cancer Network (NCCN) released guidelines in 2010 to encourage routine screening of patients with cancer for the presence of fatigue. Primarily, orthodox interventions are pharmacological.

Pharmacological interventions for CRF

There are limited pharmacological options available for the specific treatment of CRF. Standard clinical interventions tend to focus on the underlying pathologies such as anaemia and infection or associated physiological dysfunction of major systems including endocrine, cardiopulmonary, liver, renal and neurological (Mustian et al, 2007). Concurrent symptoms such as pain, nausea, depression, insomnia and dyspnoea are typically treated using pharmacologic means. Even after these factors have been addressed, Mustian et al (2007) report that many patients continue to experience significant levels of fatigue. In these situations, where persistent, moderate to severe fatigue levels are being experienced by patients, with or without a known clinical causal factor, the NCCN (2010) guidelines recommend clinicians consider integrative non-pharmacological approaches.

Non-pharmacological interventions for CRF

Clinicians commonly advocate rest and energy conservation strategies to patients, despite this type of fatigue being unrelieved by rest. However, Mustian et al (2007) report promising preliminary results for treatment-induced fatigue with moderate intensity exercise of 10–90 minutes duration, three to seven times per week.

A key indicator of CRF is the presence of psychological distress (Ahlberg et al, 2003), prompting a substantial increase in studies investigating the effectiveness of psychosocial interventions. These include, individual and/or group support, education, stress-management and behavioural strategies designed to enhance patient's coping mechanisms and fatigue management (Mustian et al, 2007). In addition, cognitive behavioural strategies to aid sleep quality, relaxation and management of concurrent symptoms of pain and depression are also favourably reported (Mitchell, 2010).

Complementary approaches offer a wider range of options. Some show promising results, particularly hypnosis (Montgomery et al, 2007) and the use of *Panax quinquefolius* (American ginseng) (Barton et al, 2009), for treatment-induced fatigue. In the first narrative review of complementary therapies in this area, aromatherapy was reported as offering a potential reduction in fatigue levels (Sood et al, 2007). Whilst this is one of the most popular complementary therapies sought by patients with cancer (Macmillan Cancer Relief, 2002), aromatherapy is not routinely advocated by clinicians. It is important to consider the clinical evidence surrounding this.

Aromatherapy in CRF: Current clinical evidence

Several studies have investigated the use of essential oils in the management of fatigue in differing health populations, including haemodialysis (Kim and Kim, 2009; Kang and Kim, 2008), multiple sclerosis (Bahraini, 2011) and post-partum mothers (Lee, 2004). Each of these studies report lower levels of fatigue in the aromatherapy groups. However, an updated review of complementary and alternative medicine (CAM) approaches for CRF identified that studies with specific focus on

the symptom itself demonstrate a greater reduction in fatigue levels than those addressing multiple symptom management (Finnegan-John et al, 2013). Currently, two studies have investigated the use of aromatherapy in the specific management of CRF and they are discussed below.

In 2004, Kohara et al identified significant improvements in fatigue levels in 20 terminally ill patients who received a three minute foot-soak with lavender (type not stipulated) essential oil followed by a 10 minute foot reflexology using lavender essential oil with Jojoba oil. Interestingly, the therapeutic effects of the combined aromatic footsoak, aromatherapy and reflexology were sustained for up to four hours following treatment.

More recently, Park et al (2016) investigated the effects of aromatherapy massage on fatigue levels and sleep in a group of 30 hospice patients. This randomised study compared 17 patients who received a 10 minute hand massage using lavender (type not stipulated) and *Citrus bergamia* (bergamot) essential oils in a 1:1 ratio blended to 1% with jojoba oil, with 13 patients who received a 10 minute hand massage using plain jojoba oil. Each group received their treatment between 9 and 10pm for five consecutive evenings. Although no significant differences were found, levels of fatigue were lower and sleep quantity improved in the aromatherapy group.

Similar findings are reflected in other non-cancer studies where the addition of essential oils reduced fatigue levels (Bahraini et al, 2011; Kang and Kim, 2008). This enhanced therapeutic effect with essential oils has also been observed in studies comparing aromatherapy versus plain carrier oil massage to manage other cancer-related symptoms (Chang, 2008; Soden et al, 2004; Wilkinson et al, 1999; Corner, 1995).

The potential of aromatherapy

Aromatherapy offers plausible potential in the complementary management of CRF. However, evidence-based research is limited, as demonstrated by the absence of aromatherapy interventions in a recent review of CAM's literature in this area (Finnegan-John et al, 2013). This indicates a need for future quality research.

Whilst Finnegan-John et al (2013) provide a valuable general ‘road-map’ for future studies (see Table 1), there are additional areas, specific to aromatherapy, which warrant further consideration for clinical practice and research within this area. These include:

- Essential oil choice
- Essential oil dilution
- Botanical hydrosols
- Aromatic applications
- Collaborative decision-making
- Timing
- Psychological aspects

Essential oil choice

Essential oil of *Lavandula angustifolia* (lavender) has featured prominently in most clinical studies investigating aromatherapy and fatigue levels, both in cancer and non-cancer populations. Blending lavender with other essential oils has also been clinically effective (see Table 2). Whilst the intention of these essential oils is to address the psychological aspects of fatigue, the actual choice of oils is generally that of the research teams rather than the patients.

Including the patient’s aroma preference is crucial to the success of any aromatherapy treatment

(Lewis, 2015). Generally, this forms an integral part of aromatherapy sessions outside of the clinical research environment. However, it is possible to offer patients a choice of essential oils within aromatic research. A good example is a study conducted by Wilkinson et al (2007) which investigated the effects of aromatherapy massage in the management of anxiety and depression. This large scale, multi-centre trial involved trained aromatherapists working with clients to construct individual blends from a selection of 20 essential oils. The results showed significant improvements in levels of anxiety in the aromatherapy group lasting for up to 2-weeks post aromatherapy massage. Similarly, a patient experience survey conducted by Dyer et al (2016), which focussed on the use of personalised aromatherapy inhalers/ aroma sticks to aid peaceful sleep, identified that “*enjoying the aroma*” was reported by patients as a key factor which aided their time asleep.

Lewis (2015) further advocates asking the client, how the odour of each essential oil or aromatic blend makes them ‘feel’. Using the client’s own words or phrases provides them with a deeper emotional connection with their personalised blend. Collectively, these factors may enhance and sustain the therapeutic effect of the aromatic intervention.

Table 1. Summary of recommendations for future research initiatives investigating complementary therapies for CRF (adapted from Finnegan-John et al, 2013)

<ul style="list-style-type: none"> • Stage of disease needs to be included to determine the relationship between fatigue levels and tumour burden • Economic impact of the intervention being studied must be included • Chronic nature of fatigue across the cancer spectrum must be considered • Identify and report the sustained effect of the intervention being studied • Sample sizes need to be sufficient to achieve statistical relevance • Sample characteristics need to be included to eliminate/reduce bias • Fatigue must be the primary outcome of investigation • Quality assurance measures of the intervention as well as the therapist delivering the intervention must be included • Optimum ‘dose’ needs to be determined (including techniques used, frequency of application and length of course) • Ascertain and include appropriate timings to deliver the intervention • Conduct a feasibility study prior to a large scale trial of complementary therapy

Table 2. Evidence to support the effective use of other essential oils with *Lavandula angustifolia* for cancer-related fatigue

Essential oils used	Reference
<i>Lavandula angustifolia</i> (lavender) <i>Citrus bergamia</i> (bergamot)	Park et al, 2016 Chang, 2008
<i>Lavandula angustifolia</i> (lavender) <i>Anthemis nobilis</i> (Roman chamomile) <i>Pelargonium graveolens</i> (geranium)	Kang and Kim, 2008
<i>Lavandula angustifolia</i> (lavender) <i>Anthemis nobilis</i> (Roman chamomile) <i>Zingiber officinale</i> (ginger)	Kim and Kim, 2009

Essential oil dilution

One challenge with using essential oils is that patients with CRF may be highly sensitive to odour as a result of pharmacological interventions such as chemotherapy. Conversely, a client's odour acuity may also be reduced, depending on their health status and age, making detection of low dilution blends difficult, as found by Park et al (2016). In their study, several clients in the aromatherapy group were unable to smell the 1% blend used, which may have had detrimental therapeutic consequences. This can be explained through what is known about the effects of essential oils in people with anosmia. Robert Tisserand (2016) states that, "as far as we know, psychological effects do not take place for someone who has completely lost their sense of smell, but the physiological effects still do". Quite possibly, this could also be the case in patients with CRF. Given that psychological factors are key indicators of CRF (Finnegan-John et al, 2013), using essential oils at a detectable odour level to the patient is vital if successful therapeutic intervention is to be achieved. This is important for future clinical practice and research.

Botanical hydrosols

Another effective way of utilising aromatherapy for CRF includes the use of botanical hydrosols.

Aromatically, their lighter fragrance may be preferred by those patients with heightened odour acuity. Hydrosols of *Rosmarinus officinalis* (rosemary) and *Mentha x piperita* (peppermint) are useful cephalics for those experiencing cognitive or memory impairment resulting from fatigue. *Citrus aurantium* var. *amara* (neroli), *Rosa damascena* (rose), *Lavandula angustifolia* (lavender), *Boswellia carteri* (frankincense) and *Melissa officinalis* (melissa) offer comfort for those seeking quality sleep and psychological relaxation (Catty, 2001).

Aromatic applications

Massage

Within the general cancer population, essential oils are predominantly administered via aromatherapy massage (Fellowes et al, 2004), which has been shown to be the patient's popular choice (Sefarty et al, 2012). In terms of CRF, the emphasis is with massage of shorter duration, such as the daily 10 minute sessions employed by Kohara et al (2004) and Park et al (2016) and the 'M' Technique® described by Buckle (2003). Massage of longer duration can be depleting for patients where energy conservation is vital.

Inhalation

There is increasing interest in the clinical benefits of inhaled essential oils via cold-air diffusion in children

receiving stem cell therapy (Ndao et al, 2010) and via personalised aromatherapy inhalers/ aroma sticks to manage symptoms of anxiety, nausea and sleep problems (Dyer et al, 2016; Stringer and Donald, 2011). Aroma sticks offer promising potential for patients with CRF because they are portable, easy to use and require little effort. Personalised blends can be created to manage the complex nature of symptoms with which an individual may present with additional scope to include the patient's aroma preference and odour acuity. More than one aroma stick may be given to manage variations in fatigue levels throughout the day. For example, a patient may require an aroma stick designed to uplift mood or alleviate anxiety and stress for daytime use and a separate aroma stick to aid sleep quality for use at night.

Showering/bathing

Other aromatic applications include using essential oils in a warm/cool shower which can be beneficial for physical and psychological fatigue (Knapp-Hayes, 2015). This is a useful way to administer citrus and other monoterpene-rich essential oils such as *Picea mariana* (black spruce), *Cupressus sempervirens* (cypress) and *Pinus sylvestris* (Scots pine) known for their uplifting properties. Aromatic bathing may be soothing at the end of the day, particularly for muscle tension and psychological relaxation to aid sleep quality. Knapp-Hayes (2015) recommends using cooler water temperatures and bathing for less than 15 minutes to reduce energy depletion.

Other applications

Cool compresses for face, hands and feet; aromatic spritzers; herbal footbaths and roller-ball applicators are other ways in which essential oils or botanical hydrosols can also be utilised.

Within aromatherapy, there is scope for multiple interventions using a variety of applications which will vary according to the individual's clinical presentation, fatigue level and experience. However the essential oils used (which must include the full botanical names), dilution, frequency of application, combination of interventions and their sustained therapeutic effects, all need to be determined in this area.

Collaborative decision-making

Exploring the patient's fatigue experience and working collaboratively with interventions tailored to their needs is not generally a feature of orthodox medicine or clinical research. And yet, in a small qualitative study by Dunwoody et al (2002) which examined aromatherapy massage in patients with cancer, collaborative decision-making was highly regarded by patients. They reported an increased sense of empowerment, as well as feeling valued as an individual with specific treatment needs, rather than being 'just another cancer patient'.

The patient's choice of essential oils, botanical hydrosols and applications, as well as considering their aroma preference and odour acuity, could collectively exert a positive and sustained influence on therapeutic outcomes. These are crucial considerations for clinical practice and research in this area. Arguably, it would increase the number of treatment variables in clinical studies. As such, researchers should look to the methodology of Wilkinson et al (2007) who included a range of essential oils from which patients could choose as well as involving qualified aromatherapists to work directly with patients and collaboratively develop targeted individual blends.

Timing

Currently, the emphasis of research surrounds treatment-induced fatigue which may be an entirely different experience to the fatigue of terminal end stage disease or at other times across the cancer spectrum. There is increasing evidence to support fatigue as an early symptom of diagnosis, as well as its presence extending many years beyond completion of active cancer treatments (Hofmann et al, 2007). These are factors which require careful consideration in clinical practice and research in order to determine at which point in the cancer spectrum various aromatic interventions will be most effective.

Psychological aspects

Quite possibly, the greatest potential for aromatherapy as a complementary intervention for CRF is in addressing its key psychological indicators.

These are areas of clinical relevance within aromatherapy which have been well researched in the general cancer population (Dyer et al, 2016; Imanishi et al, 2009; Chang, 2008; Wilkinson et al, 2007; Wilkinson et al, 1999; Corner, 1995). The relevant findings of these studies are summarised in Table 3.

Anxiety, depression, chronic stress and insomnia require the diverse effects of ester-rich oils on the central nervous system such as, *Lavandula angustifolia* (lavender), *Anthemis nobilis* (Roman chamomile), *Citrus reticulata* (mandarin), *Mentha citrata* (bergamot mint) and *Cananga odorata* (ylang ylang). The sedating qualities of aldehyde-

Table 3. Studies showing the psychological benefits of aromatherapy intervention in patients with cancer

Reference	Patient sample size	Aromatherapy intervention and control	Benefits of aromatherapy intervention
Corner et al, 1995	52 patients receiving active cancer treatments	Randomised <ul style="list-style-type: none"> Group 1 received 8 weekly, 30-min aromatherapy back massage using 2% blend lavender, rosewood, lemon, rose, valerian Group 2 received 8 weekly, 30-min back massage using plain carrier oil Group 3 received best supportive care 	<ul style="list-style-type: none"> Significant decrease in anxiety in group 1
Wilkinson et al, 1999	103 palliative care patients	Randomised <ul style="list-style-type: none"> Full body aromatherapy massage 3 times per week using Roman chamomile blend Full body massage 3 times per week using plain carrier oil 	<ul style="list-style-type: none"> Significant reduction in anxiety in both groups Aromatherapy massage group showed enhancement of quality of life, physical and psychological symptoms
Wilkinson et al, 2007	288 patients with cancer	Randomised <ul style="list-style-type: none"> Received 20-min aromatherapy massage using individualised blend created from 20 essential oils. Between 2-4 sessions received Best supportive care 	<ul style="list-style-type: none"> Aromatherapy massage group showed a significant decrease in anxiety lasting for up to 2-weeks post-treatment
Imanishi et al, 2009	12 patients with breast cancer	<ul style="list-style-type: none"> Received 30-min aromatherapy massage twice weekly for 4 weeks using a blend of sweet orange, lavender and sandalwood essential oils in jojoba oil 	<ul style="list-style-type: none"> Anxiety levels significantly decreased after each aromatherapy massage with both short and long-term effects
Chang, 2008	58 hospice in-patients	Randomised <ul style="list-style-type: none"> Received daily 5-min aromatherapy hand massage for 7 days using a blend of bergamot, lavender and frankincense at 1.5% dilution Received daily 5-min hand massage for 7 days using plain carrier oil 	<ul style="list-style-type: none"> Significant reduction in anxiety and pain in the aromatherapy massage group
Dyer et al, 2016	61 patients with cancer	Audit of cancer patients using aroma sticks to aid peaceful sleep <ul style="list-style-type: none"> Blend A: bergamot and sandalwood Blend B: frankincense, lavender and mandarin Blend C: sweet orange, petitgrain, lavandin, mandarin, bergamot, lavender and Roman chamomile (proprietary blend) 	<ul style="list-style-type: none"> Blends A and B were more popular Improvement in at least 1 point in sleep in 64% of patients

rich oils, including *Melissa officinalis* (melissa), *Cymbopogon citratus* (lemongrass) and *Litsea cubeba* (may chang) may also be beneficial as well as the tonifying and psychophysiological effects of alcohol-rich oils such as *Rosa damascena* (rose), *Pelargonium graveolens* (geranium), *Agonis fragrans* (fragonia), *Citrus aurantium var amara* (neroli) and *Origanum majorana* (sweet marjoram). Many of these essential oils are mentioned in the texts of Knapp-Hayes (2015), Buckle (2013) and Price & Price (2012), as oils with potential to enhance deep-level psychological relaxation for those experiencing the intense psychological and spiritual distress associated with cancer.

A final consideration is in combining aromatherapy approaches with other non-pharmacological interventions to evaluate if this results in greater therapeutic effect. CRF is multi-factorial and no single intervention is going to offer complete relief. Combined modalities warrant further investigation.

Conclusion

In conclusion, CRF is a complex symptom with several underlying causes. No two patients will present in the same way. As such, individualised assessment, treatment and management are crucial. A combination of pharmacological and non-pharmacological approaches seems the most appropriate way forward. Aromatherapy offers significant potential as a non-pharmacological intervention which addresses the holistic and individual needs of the patient, particularly the key psychological indicators of CRF. However, further clinical research is required which is specific to the aromatic management of this distressing symptom.

Whilst the recent review by Finnegan-John et al (2013) provides a valuable road map to aid general research in this area (see Table 1), there are specific issues surrounding aromatherapy which require clinical expertise. Qualified clinical aromatherapists are in a strong position to work collaboratively with patients, selecting and administering aromatic interventions appropriate to their individual needs. Further clinical research is paramount and will strengthen therapeutic outcomes and evidence-based practice in support of aromatherapy as a complementary intervention in the management of CRF.

References

- Ahlberg K, Ekman T, Gaston-Johansson F, Mock V (2003). Assessment and management of cancer-related fatigue in adults. *The Lancet*, 362:640-650.
- Bahraini S (2011). The effect of aromatherapy massage on the fatigue severity in women with multiple sclerosis. *Journal of Sabzevar University of Medical Sciences*, 18(3):172-178.
- Barton D, Soori G, Bauer B et al (2009). Pilot study of *Panax quinquefolius* (American ginseng) to improve cancer-related fatigue: a randomised, double-blind, dose-finding evaluation: NCCTG trial NO3CA. *Supportive Cancer Care*, 18:179-187.
- Buckle J (2003). *Clinical Aromatherapy* (second edition). London, UK: Elsevier Ltd.
- Catty S (2001). *Hydrosols: the next aromatherapy*. Vermont: Healing Arts Press.
- Chang S (2008). Effects of aroma hand massage on pain, state anxiety and depression in hospice patients with terminal cancer. *Taehan Kanho Hakhoe Chi*, 38(4):493-502.
- Cimprich B (1992). Attentional fatigue following breast cancer surgery. *Research in Nursing and Health*, 15:199-207.
- Corner J (1995). An evaluation of the use of massage and essential oils in the well-being of cancer patients. *International Journal of Palliative Nursing*, 1(2):67-73.
- Curt G, Breibart W, Cella D et al (2000). Impact of cancer-related fatigue on the lives of patients: new findings from the fatigue coalition. *The Oncologist*, 5:353-360.
- Dunwoody L, Smyth A, Davidson R (2002). Cancer patients' experiences and evaluations of aromatherapy massage in palliative care. *International Journal of Palliative Nursing*, 8(10):497-504.
- Dyer J, Cleary L, McNeill S, Ragsdale-Lowe M, Osland C (2016). The use of aromasticks to help sleep problems: a patient experience survey. *Complementary Therapies in Clinical Practice*, 22:51-58.
- Fellowes D, Barnes K, Wilkinson S (2004). Aromatherapy and massage for symptom relief in patients with cancer. *Cochrane Database Syst Rev.* (2):CD002287.
- Finnegan-John J, Molassiotis A, Ream E (2013). A systematic review of complementary and alternative medicine interventions for the management of cancer-related fatigue. *Integrative Cancer Therapies*, 12(4):276-290.
- Glaus A (1993). Assessment of fatigue in cancer and non-cancer patients and in healthy individuals. *Supportive Care Cancer*, 1:305-315.

- Hofman M, Ryan J, Figuero-Moseley C, Jean-Pierre P, Morrow G. (2007). Cancer-related fatigue: the scale of the problem. *The Oncologist*, 12(suppl 1):4-10.
- Imanishi J, Kuriyama H, Shigemori I, et al (2009). Anxiolytic effect of aromatherapy massage in patients with breast cancer. *eCAM*, 6(1):123-128.
- Kang S, Kim N (2008). The effects of aroma hand massage on pruritis, fatigue and stress of haemodialysis patients. *The Journal of Korean Academic Society of Adult Nursing*, 20:883-894.
- Kim I, Kim N (2009). Effects of aroma massage on pain, activities of daily living and fatigue in patients with knee osteoarthritis. *Journal of Muscle and Joint Health*, 16:145-153.
- Knapp-Hayes M (2015). *Complementary Nursing in end of life Care*. Netherlands: Kicozo.
- Kohara H, Miyauchi T, Suehiro Y, Ueoka H, Takeyama H, Morita T (2004). Combined modality treatment of aromatherapy, footsoak and reflexology relieves fatigue in patients with cancer. *Journal of Palliative Medicine*, 7(6): 791-796.
- Lane I (2005) Managing cancer-related fatigue in palliative care. *Nursing Times*, 101(18): 38-41.
- Lee S (2004) Effects of aromatherapy inhalation on fatigue and sleep quality of post-partum mothers. *Korean Journal of Women's Health in Nursing*, 10(3):235-243.
- Lewis R (2015). Aroma-psychology in clinical care: evidence and applications. *Workshop notes: Aromatica Conference, Gold Coast, Australia*.
- Macmillan Cancer Relief (2002). *Directory of complementary therapy services in UK cancer care - public and voluntary sectors*. London, UK: Macmillan Cancer Relief.
- Macmillan Practice Development Unit (1997). *An exploration of the nature and impact of fatigue in patients with advanced cancer. A case study*. The Research Review Series, London: Royal Marsden NHS Trust.
- Mitchell S (2010). Cancer-related fatigue: state of the science. *American Academy of Physical Medicine & Rehabilitation*, 2:364-383.
- Montgomery G, Bovbjerg D, Schnur J, et al (2007). A randomised clinical trial of brief hypnosis intervention to control side effects in breast surgery patients. *Journal of National Cancer Institution*: 99:1304-1312.
- Mustian K, Morrow G, Carroll J, Figuero-Moseley C, Jean-Pierre P, Williams G (2007). Integrative nonpharmacological behavioural interventions for the management of cancer-related fatigue. *The Oncologist*, 12(suppl 1): 52-67.
- National Comprehensive Cancer Network (2010). *Clinical practice guidelines in oncology: cancer-related fatigue*. Retrieved from: https://www.nccn.org/professionals/physician_gls/f_guidelines.asp
- Ndao M, Ladas E, Cheng B, Sands S, Snyder K, Garvin J, Kelly K (2010). Inhalation aromatherapy in children and adolescents undergoing stem cell infusion: results of a placebo controlled double-blind trial. *Psycho-oncology*, 21(3):247-254.
- Park H, Chun Y, Kwak S (2016). The effects of aromatherapy hand massage on fatigue and sleeping among hospice patients. *Open Journal of Nursing*, 6:515-523.
- Pearce S, Richardson A (1996). Fatigue in cancer: a phenomenological perspective. *European Journal of Cancer Care*, 5:111-115.
- Potter J (2004). Fatigue experience in advanced cancer: a phenomenological approach. *International Journal of Palliative Nursing*, 10(1):15-23.
- Price S, Price L (2012). *Aromatherapy for Health Professionals (4th ed.)*, London, UK: Elsevier Ltd.
- Sefarty M, Wilkinson S, Freeman C, Mannix K, King M (2012). Helping with touch or talk: a pilot randomised controlled trial to examine the clinical effectiveness of aromatherapy massage versus cognitive behavioural therapy for emotional distress in patients in cancer and palliative care. *Psychoncology*, 21(5):563-569.
- Soden K, Vincent K, Craske S, Lucas C, Ashley S (2004). A randomised controlled trial of aromatherapy massage in a hospice setting. *Palliative Medicine*, 18(2): 87-92.
- Sood A, Barton D, Bauer B, Loprinzi C (2007). A critical review of complementary therapies for cancer-related fatigue. *Integrative Cancer Therapies*, 6(1): 8-13.
- Stringer J, Donald G (2011). Aromasticks in cancer care: an innovation not to be sniffed at. *Complementary Therapies in Clinical Practice*, 17(2): 116-21.
- Tisserand R (2016). On-line question and answer session and personal correspondence. <https://www.facebook.com/RobertTisserandEssentialTraining/posts/1293158140715384:0>
- Wilkinson S, Aldridge J, Salmon I, Cain E, Wilson B (1999). An evaluation of aromatherapy massage in palliative care. *Palliative Medicine*, 13(5):409-417.
- Wilkinson S, Love S, Westcombe A, et al (2007). Effectiveness of aromatherapy massage in the management of anxiety and depression in patients with cancer: a multicentre randomised controlled trial. *American Journal of Clinical Oncology*, 25(5): 532-539.