

Local and Systemic Therapies for Breast Cancer Patients: Reducing Short-term Symptoms with the Methods of Integrative Medicine

Lokale und systemische Therapien der Patientin mit Mammakarzinom: kurzfristige Symptome lindern mit Methoden der Integrativen Medizin

Authors

C. C. Hack¹, P. Voiß^{2,3}, S. Lange², A. E. Paul², S. Conrad², G. J. Dobos², M. W. Beckmann¹, S. Kümmel³

Affiliations

¹ Universitäts-Brustzentrum Franken, Frauenklinik, Universitätsklinikum Erlangen, Friedrich-Alexander Universität Erlangen-Nürnberg, Comprehensive Cancer Center Erlangen-EMN, Erlangen
² Klinik für Naturheilkunde und Integrative Medizin, Kliniken Essen Mitte, Evang. Huysens-Stiftung/Knappschaft GmbH, Essen
³ Brustzentrum, Kliniken Essen Mitte, Evang. Huysens-Stiftung/Knappschaft GmbH, Essen

Key words

- complementary and alternative medicine
- CAM
- integrative medicine
- breast cancer
- naturopathic treatment
- phytotherapy

Schlüsselwörter

- Komplementäre und Alternative Medizin
- CAM
- Integrative Medizin
- Mammakarzinom
- Naturheilverfahren
- Phytotherapie



Deutschsprachige Zusatzinformationen online abrufbar unter: www.thieme-connect.de/ejournals/toc/gebfra

received 20.2.2015
revised 21.6.2015
accepted 21.6.2015

Bibliography

DOI <http://dx.doi.org/10.1055/s-0035-1557748>
 Geburtsh Frauenheilk 2015; 75: 675–682 © Georg Thieme Verlag KG Stuttgart · New York · ISSN 0016-5751

Correspondence

Dr. med. Carolin C. Hack
 Frauenklinik
 Comprehensive Cancer Center Erlangen – EMN (CCC ER-EMN)
 Universitätsklinikum Erlangen
 Friedrich-Alexander-Universität
 Erlangen-Nürnberg
 Universitätsstraße 21–23
 91054 Erlangen
carolin.hack@uk-erlangen.de

Abstract

With improved prognosis due to advances in the diagnosis and therapy of breast cancer, physicians and therapists now focus on aspects such as quality of life and the management of side effects from breast cancer treatment. Therapy- and disease-related side effects often reduce the patient's quality of life and can place a further burden on patients, with non-compliance or discontinuation of therapy a potential consequence. Study data have shown that therapy- and disease-related side effects can be reduced using the methods of integrative medicine. Reported benefits include improving patients' wellbeing and quality of life, reducing stress, and improving patients' mood, sleeping patterns and capacity to cope with disease. Examining the impact of integrative medicine on the side effects of cancer treatment would be beyond the scope of this review. This article therefore looks at short-term side effects of cancer treatment which are usually temporary and occur during or after local and systemic therapy. The focus is on mind-body medicine, acupuncture and classic naturopathic treatments developed by Sebastian Kneipp as complementary therapies. The latter includes hydrotherapy, phytotherapy, nutritional therapy, exercise therapy and a balanced lifestyle.

Introduction

Local treatment of breast cancer consists of surgery and/or radiation therapy; other treatments include drug therapies such as chemotherapy, antihormone therapy and targeted therapies [1]. With improved prognosis due to advances in the

Zusammenfassung

Mit verbesserter Prognose und Fortschritten in der Diagnostik und Therapie des Mammakarzinoms rücken Aspekte wie Lebensqualität und Nebenwirkungsmanagement bei der Mammakarzinombehandlung in den Fokus der Ärzte und Therapeuten. Therapie- oder erkrankungsbedingte Nebenwirkungen mindern häufig die Lebensqualität und können damit zu einer zusätzlichen Beeinträchtigung der Patientin führen. Nicht selten sind Non-Compliance oder sogar Therapieabbruch die Folge. Studiendaten zeigen, dass durch Methoden der Integrativen Medizin therapie- und krankheitsbedingte Nebenwirkungen reduziert werden können. Eine Steigerung des Wohlbefindens und der Lebensqualität, der Abbau von Stressbelastungen und eine Verbesserung der Stimmung, des Schlafes und der Krankheitsbewältigung sind nachgewiesen. Alle Nebenwirkungen der Integrativen Medizin zu beleuchten, würde den Umfang des hier vorliegenden Reviews übersteigen, sodass sich dieser Artikel auf kurzfristige Nebenwirkungen, die in der Regel zeitlich begrenzt während oder nach der lokalen bzw. systemischen Therapie auftreten, fokussiert. Der Fokus richtet sich speziell auf Mind-Body-Medizin, Akupunktur und die klassischen Naturheilverfahren nach Sebastian Kneipp als integrative Therapieoptionen. Letztere umfassen die Hydrotherapie, Phytotherapie, Ernährungstherapie, Bewegungstherapie und Ordnungstherapie.

diagnosis and treatment of breast cancer, physicians and therapists now also focus on aspects such as quality of life and the management of side effects from breast cancer treatment [2]. Great strides have been made in recent years in understanding molecular tumor biology, therapy mechanisms and patient characteristics. A number of

Table 1 Short-term side effects of local and systemic therapies for breast cancer (examples) [1,2].

Local therapy	
Surgery	Radiation therapy
▶ Pain	▶ Radiation erythema
▶ Impaired wound healing	▶ Skin damage/radiation burns
▶ Swelling/lymphedema	▶ Lymphedema/swelling
▶ Hematoma	▶ Infection
▶ Thrombosis	
Systemic therapy	
Chemotherapy	Antihormone therapy
▶ Nausea/vomiting	▶ Joint, bone, and muscle pain
▶ Mucositis/stomatitis	
▶ Diarrhea	
▶ Constipation	
▶ Immune deficiency and susceptibility to infection	
▶ Hair loss	
Antibody therapy	Osteo-oncologic treatment
▶ Joint, bone, and muscle pain	▶ Flu-like symptoms
▶ Fever, chills	▶ Fever, chills
▶ Flu-like symptoms	▶ Headache
	▶ Bone pain/pain in the extremities
	▶ Gastrointestinal complaints

new molecular tests and modern therapies have emerged, not only in the field of anti-HER2 therapy, but also to treat triple-negative and hormone receptor-positive patients. New therapies are being developed which aim to overcome trastuzumab resistance by influencing the PI3K pathway or inhibiting the cell cycle [3]. New therapies for breast cancer have improved survival rates but have also resulted in an increase in side effects and interactions. The cancer diagnosis is not the only physical and psychological burden on patients. Cancer treatments often have considerable side effects which reduce patients' quality of life, creating an additional burden for patients [4–6]. Moreover, breast cancer patients now spend significantly longer periods in therapy [7]. Therapy- or disease-related side effects often reduce the patient's quality of life and have a significant adverse impact on the patient [8]. The consequence may be non-compliance or even discontinuation of therapy [9,10]. Around 31% of breast cancer patients discontinue antihormone therapy with an aromatase inhibitor in the first 5 years, the majority because of unpleasant side effects [11,12].

The EvaluateTM study included a total of 5045 patients with hormone receptor-positive breast cancer, enrolled between January 2008 and December 2009. The study offers a good overview of therapy management in the routine care of postmenopausal patients with hormone receptor-positive breast cancer, including information on therapy compliance and on patient satisfaction with the provision of information and how the information is conveyed [13].

Both local and systemic therapies to treat breast cancer are associated with side effects, classified into short-term and longer term consequences. This is not a rigorous differentiation as the borders between the two are often blurred. Variations are of course always possible. Because of the large number of side effects from treatment and of potential integrative medicine therapies, this review cannot focus on all types of complaints and the potential integrative medicine methods used to combat them. The article focuses on methods of mind-body medicine, acupuncture and naturopathic medicine as complementary therapies.

This review exclusively considers short-term side effects (Table 1), which occur for a limited period of time during or after therapy. Such side effects include impaired wound healing, edema and radiation erythema after local therapy, nausea and vomiting, mucositis and stomatitis, and diarrhea and constipation after systemic therapy.

The prevalence of side effects of breast cancer treatment reported in the literature varies greatly and differs from study to study (Tables 2 to 4) [1,14,15].

Integrative medicine is a complementary treatment offered to breast cancer patients to alleviate therapy- and disease-related side effects [16–18] and improve patients' quality of life [19–21]. Improved wellbeing, reduced stress and improvements in mood, sleeping and coping with disease have also been reported [16,17,19]. Various methods are used as complementary therapies to relieve the symptoms of tumor disease and the side effects of oncologic therapy. However, none of these can replace supportive therapies based on established medical guidelines. It is also important to be aware of potential contraindications and interactions, which requires a good understanding of integrative medicine [1,2,22].

Integrative medicine in gynecologic oncology has many aims (Table 5).

The increased evidence for the efficacy of integrative interventions has resulted in recommendations being included in the guideline on the treatment of breast cancer issued by the Association of Scientific Medical Societies in Germany (AWMF), the German Cancer Society (*Deutsche Krebsgesellschaft e. V.*) and Ger-

Table 2 Prevalence of side effects after surgery and radiation therapy for breast cancer [1,14,15].

Surgery (breast-conserving surgery, resection, sentinel lymph node biopsy, axilla dissection)	
▶ Common (depending on the type and extent of surgery):	
76%	Hematoma/seroma
31–71%	Sensory disturbances
57%	Scarring/fatty tissue necrosis
24–56%	Swelling/lymphedema
12–51%	Pain
2–51%	Limited range of movement
17–33%	Strength impairment
▶ Rare:	
4–17%	Impaired wound healing
3–15%	Wound infection
Radiation therapy (conventional radiation therapy, brachytherapy)	
▶ Common (depending on the type, dose and site of radiation therapy application):	
80–90%	Erythema/radiodermatitis
30–80%	Fatigue
0.2–70%	Telangiectases
2–67%	Breast fibrosis/breast deformity
43–54%	Locoregional dysesthesias
2–51%	Breast edema
5–36%	Hyperpigmentation
35%	General malaise
0.4–33%	Lymphedema of the arm
10–15%	Wet desquamation
▶ Rare:	
< 1%	Symptomatic pneumonitis
< 1%	Pulmonary fibrosis/myocardial fibrosis
< 1%	Osteoradionecrosis of the ribs
< 1%	Axillary plexus injury

Table 3 Prevalence of chemotherapy-related and antihormone therapy-related side effects in breast cancer patients [1,2].

Chemotherapy (epirubicin, cyclophosphamide, paclitaxel, carboplatin)	
▶ Common:	
10–100%	Hair loss
< 10%	Nausea/vomiting (depending on the emetogenicity and antiemetic therapy)
to > 90%	
1–84%	Neurotoxicity
16–75%	Cognitive impairment (“chemo brain”)
20–70%	Insomnia
30–60%	lethargy, chronic fatigue
25–40%	febrile neutropenia (without previous cytostatic therapy)
10–40%	Inflammation of the mucous membranes (mucositis, stomatitis)
5–60%	Diarrhea
20–30%	Depressive episodes
▶ Rare:	
2–20%	Anemia
0.8–4%	Cardiotoxicity in the adjuvant setting
< 2%	Acute hypersensitivity reaction
Antihormone therapy (letrozole, tamoxifen, exemestane, anastrozole, fulvestrant)	
▶ Common:	
34–40%	Hot flushes, sweating
30–24%	Bone, joint and muscle pain
20–30%	Depressive mood
> 10%	Fatigue
6–12%	Osteoporosis
1–10%	Increased appetite and weight gain
1–10%	Insomnia
1–10%	Nausea
1–10%	Hair loss, dry skin
1–10%	Hypercholesterolemia
5–9%	Vaginal bleeding
▶ Rare:	
2–4%	Thrombosis
1–2%	Cardiovascular events

man Cancer Aid (*Deutsche Krebshilfe e.V.*): the Interdisciplinary S3-Guideline on the Diagnosis, Therapy and Follow-up Care in Breast Cancer (*Interdisziplinäre S3-Leitlinie für die Diagnostik, Therapie und Nachsorge des Mammakarzinoms*) [1] and the recommendations for action issued by the Breast Commission of the German Gynecologic Oncology Study Group (*Arbeitsgemeinschaft für Gynäkologische Onkologie e.V. Kommission Mamma*) [2]. It is difficult to achieve the same level of evidence for individual recommendations made to patients in integrative medicine as for evidence-based standard therapies in senology or gynecologic oncology because there are currently almost no standards, norms or benchmarks in the field of integrative medicine which are considered accurate (e.g. guidelines, medical treatment recommendations, standards). Standardization, structuring and the intro-

Table 5 Aims of complementary medicine therapies in gynecologic oncology [17].

▶ Improved management of side effects
▶ Improved psychological and physical fitness
▶ Improved quality of life
▶ Improved therapy compliance
▶ Primary and secondary prophylaxis
▶ (poss. improved prognosis)

Table 4 Prevalence of side effects associated with targeted and osteo-oncologic therapy for breast cancer [1,2].

Targeted therapy (trastuzumab [Herceptin®], lapatinib [Tyverb®], pertuzumab [Perjeta®], trastuzumab emtansin [T-DM1, Kadcyla®], bevacizumab [Avastin®])	
▶ Common:	
16–67%	Gastrointestinal complaints
27%	Muscle and joint pain
23–24%	Skin rash/erythema
21%	Headache
12–15%	Fever/chills
10–14%	Flu-like symptoms
11%	Dizziness
> 10%	Blood count changes (anemia, thrombopenia, leukopenia)
1–10%	Fluctuations in blood pressure
> 10%	Cardiac arrhythmia
1–10%	Cardiac insufficiency
▶ Rare:	
< 0.1%	Pericardial effusion/pleural effusion
Osteo-oncologic treatment (zoledronic acid [Zometa®, Aclasta®], denosumab [Xgeva®, Prolia®], ibandronate [Bondronat®], alendronate [Fosamax®], risedronate [Actonel®])	
▶ Common:	
> 10%	Hypocalcemia and hypophosphatemia
> 10%	Flu-like symptoms
9%	Headache
3–7%	Fever/chills
3%	Bone and joint pain
1–10%	Gastrointestinal complaints
1–10%	Renal function disorders
1–10%	Anemia
1–10%	Skin rash
▶ Rare:	
< 0.1%	Jaw osteonecrosis
< 0.1%	Cardiac arrhythmia

duction of criteria used for quality assurance in oncology could provide greater safety and better quality for patients and improve the overall acceptance and value of integrative medicine [23]. Unless otherwise specified, the following suggestions for integrative therapies in breast cancer were obtained from randomized controlled studies, systematic reviews, or meta-analyses [24–30].

Short-term Side Effects of Local Therapies



Lymphedema

Exercise therapy

Physical exercise is increasingly being recommended to patients with lymphedema. The current data shows that physical exercise is not, as was previously assumed, a contraindication; on the contrary, sport can even have a protective effect. These findings are largely based on studies carried out in breast cancer patients and refer to resistance training, aerobic exercise and stretching exercises [31]. Other forms of exercise such as pilates, yoga, tai chi, qigong and relaxation techniques have not yet been adequately studied and are therefore not currently recommended. Theoretically, there is no reason why patients should not do exercise in which movements are calm and unhurried. Physical exercise should be done under expert supervision to ensure a proper

Table 6 Integrative therapies for lymphedema, impaired wound healing and radiation-induced skin damage.

Symptoms	Lymphedema	Impaired wound healing, radiation-induced skin damage
Mind-body medicine	▶ Relaxation techniques	
Acupuncture	▶ 30 min 2×/week ▶ TE-14, LI-15, LU-5, CV-12, CV-3, LI-4, ST-36, SP-6	
Exercise therapy	▶ Sports and exercise therapy (endurance and resistance training, stretching exercises), pilates, yoga, tai chi, qigong	
Phytotherapy		▶ Chamomile: e.g. Hewekzem® novo ointment, Kamillosoan® salve/cream ▶ Calendula: e.g. Calendula® ointment, Calendumed® cream ▶ Hamamelis: e.g. Hametum® ointment, Hamamelis® salve 10% Weleda ▶ Protein-rich diet

warm-up, cool-down and an appropriate intensity and selection of exercises.

A recent, 3-arm, randomized controlled study (n = 62), the first study to compare the safety and efficacy of different intensities of resistance training (moderate-high intensity vs. low-load exercise), reported significant improvements in muscle strength, muscle endurance and quality of life in terms of physical functioning compared with standard therapy (no exercise). There was a trend to better results among the group who did high-load exercise, but there were no differences between exercise groups with respect to severity of lymphedema symptoms and no adverse events [32].

Patients with lymphedema after breast cancer surgery can safely do upper body resistance exercise. Physical exercise had a protective effect on lymphedema symptoms [31].

Acupuncture

Lymphedema is not a contraindication for acupuncture in the affected arm. Data on the safety of acupuncture treatment used in affected extremities after surgery were published for the first time at the end of 2011. In 2013, the same study group around Barrie R. Cassileth published data from a pilot study on the efficacy of acupuncture to treat lymphedema of the upper limbs [33]. Lymphedema was reduced by 30% in one third of breast cancer patients treated in the study. The respective puncture sites on the skin were disinfected prior to every needle application [33] (● Table 6).

Impaired wound healing and radiation-induced skin damage

Phytotherapy

Phytotherapeutic agents such as calendula, chamomile or hamamelis are used to treat impaired postoperative wound healing, hyperproliferative scars or radiation-induced skin damage [30, 34, 35]. These agents can be applied topically in the form of baths, poultices, salves, creams or gels. The wound-healing and anti-inflammatory properties of phytotherapeutic drugs have a beneficial impact on the process and improve the cosmetic result [34–36] (● Table 6).

A 20% calendula ointment has been recommended for the prevention of radiation dermatitis after radiation therapy [30]. The ointment is thinly applied to the skin several times per day. The 20% calendula ointment was found to be superior to topical therapy with trolamine for the prevention of radiation-induced skin damage. A meta-analysis of 254 breast cancer patients receiving radiation therapy found a significantly lower incidence of radia-

tion dermatitis \geq grade 2 in the Calendula group compared to the Trolamine group (41 vs. 63%; $p < 0.001$) [30].

Short-term Side Effects of Systemic Therapies



Mucositis and stomatitis

Chemotherapy and cachexia can lead to painful changes in the mucosa of the mouth, throat and esophagus which make eating more difficult for affected breast cancer patients. In addition to antiseptic and analgesic mouth rinses, some naturopathic therapies have been found to be effective in practice [37–39].

Nutrition and dietary interventions

Various dietary strategies for the management of side effects which have been proved to be effective in practice and which can be applied without the risk of additional undesirable side effects are described below. The boundaries between dietary interventions and phytotherapy are blurred.

When mucous membranes are inflamed, it is important to minimize mechanical and physical stresses on the membranes, e.g. only finely ground wholemeal and wholegrain products should be consumed, for example in the form of oat-spelt flakes, and food consumed should be no more than lukewarm. Because oats (including oat milk) have high levels of β -glucans, the ingestion of oat-based foods can potentially offer some protection for gastrointestinal mucosa [40]. Maintaining a consistent oral hygiene is beneficial, including frequent rinsing with suitable herbal decoctions, e.g. sage leaf tea. Very good results have been reported for sea buckthorn oil, of which a small amount (a coffee-spoonful) is taken into the mouth, distributed around the oral cavity and spat out again after a brief time in which it is allowed to take effect [41]. Sea buckthorn oil strongly stains the oral cavity and changes the color of the tongue, making tongue diagnosis as used in traditional Chinese medicine difficult. In patients with gastritis and esophagitis a concomitant ingestion of flaxseed gruel or flaxseed tea is recommended [42]. Enzyme-rich foods which are also low in acidity (e.g. papaya) also promote healing as do mild preparations of long-simmered lentils (ayurvedic dahl recipes) [43] and sweet potato or parsnip purees.

Phytotherapy

Liquid extracts or tinctures of essential oils of chamomile, arnica flowers, sage leaves and myrrh can relieve symptoms of mucositis and stomatitis (Kamillosoan®, Dr. Hauschka® sage mouthwash, Hetterich® tincture of myrrh) [37–39]. They contain anti-inflammatory, antibacterial and antiviral agents. Treatment consists of

Table 7 Integrative therapies for nausea/vomiting and mucositis/stomatitis.

Symptoms	Mucositis/stomatitis	Nausea/vomiting
Mind-body medicine		▶ Jacobson's progressive muscle relaxation technique, relaxation methods
Acupuncture		▶ Stomach 36, Conception Vessel 12, Pericardium 6, Large Intestine 4, and Liver 3
Phytotherapy	<ul style="list-style-type: none"> ▶ Prophylactically rinse mouth with oil (e.g. olive oil, rapeseed oil) ▶ Tincture of myrrh (e.g. Hetterich® tincture of myrrh, dabbing using a cotton bud or rinsing with myrrh tincture) ▶ Aldiamed® (Aloe vera, lactoferrin, lysozyme) ▶ Rinse mouth with sage or chamomile tea ▶ Traumeel® S tablets (which include arnica, calendula, chamomile, belladonna, St. John's wort) 	<ul style="list-style-type: none"> ▶ Ginger root (Zintona capsules®), ginger water/tea, (Tinctura Zingiberis®) ▶ Iberogast® (angelica, caraway, milk thistle, balm, peppermint, greater celandine, licorice) ▶ Chamomile (<i>Matricaria chamomillae</i>), balm (<i>Melissa officinalis</i>) and peppermint (<i>Mentha piperita</i>) ▶ Essential oils (ginger, peppermint, coriander)
Nutritional therapy	<ul style="list-style-type: none"> ▶ No hot or spicy drinks/foods ▶ No acidic foodstuffs or drinks ▶ Foodstuffs containing β-glucan (oat-spelt flakes) ▶ Sea buckthorn ▶ Flaxseed gruel/tea ▶ Foods with low acidity (e.g. sweet potato or parsnip puree, papaya, lentils) 	<ul style="list-style-type: none"> ▶ Ginger ▶ Mildly bitter herbal remedies, e.g. <i>Centaurium erythraea</i>

rinsing the oral cavity or dabbing the inflamed area with the application several times per day. In addition to ready-to-use preparations, home-made sage or chamomile teas are also effective and simple to prepare. A Cochrane review on the prevention of oral mucositis in antitumoral therapy reported positive evidence for the local application of aloe vera extracts (e.g. gargling 2 ×/d for at least 20 s with Aldiamed® mouthwash) [37,39].

Nausea and vomiting

Breast cancer patients often suffer from nausea and vomiting during chemotherapy or postoperatively. In addition to standard drug therapies to alleviate symptoms, integrative medicine offers an important complementary approach (▶ **Table 7**).

Mind-body medicine

Jacobson's progressive muscle relaxation is recommended during chemotherapy to reduce the duration and possibly also the incidence of nausea and vomiting. However this relaxation method does not appear to affect the intensity of nausea [44].

Acupuncture

The use of acupuncture to alleviate postoperative and chemotherapy-induced nausea/vomiting is becoming more accepted based on increasing evidence. The Breast Commission of the Gynecologic Oncology Study Group [45] therefore recommends the use of acupuncture to treat nausea both postoperatively and during chemotherapy. A Cochrane review by Lee and Fan published in 2009 included 40 studies with 4858 participants in whom the acupuncture point Pericardium 6 was stimulated. Compared with sham acupuncture, acupuncture point stimulation significantly reduced nausea, vomiting and the need for antiemetic drugs [26]. Another review on the treatment of chemotherapy-induced nausea and vomiting found that acupuncture point stimulation reduced the incidence of acute vomiting [27]. The most commonly used acupuncture points are: Stomach 36, Conception Vessel 12, Pericardium 6, Large Intestine 4 and Liver 3.

Nutrition and dietary interventions

Ginger has been found to have mildly antiemetic properties. Other recommended antiemetics include bitter herbal remedies, e.g. *Centaurium erythraea*, essential oils and fresh air. Breast cancer patients can add fresh ginger to their food and/or drink it in the form of an infusion [46].

Phytotherapy

Ginger (*Zingiber officinale*) was used as an herbal antiemetic long before the introduction of modern antiemetic drugs. It acts as an antiemetic and cholagogue, stimulates the flow of saliva and gastric juices, and promotes intestinal peristalsis. Controlled studies found ginger to be superior to placebo and equivalent to reference drugs [29,47,48]. In a study of 576 breast cancer patients, Ryan et al. showed that ginger, administered in doses of 500–1000 mg/day, was able to reduce the severity of acute nausea [48]. In another study of 100 breast cancer patients with advanced stage disease, ginger was effective in reducing the prevalence of acute nausea 6 to 24 hours after chemotherapy [29]. The effect occurs through mild inhibition of 5-HT₃ receptors, which are significantly involved in processing and reinforcing emetic stimuli [49]. It is important to watch for interactions with aprepitant (Emend®) when using ginger because of the potential antagonist effects [50].

Ginger in the form of tea or ginger water can be prepared by breast cancer patients themselves. It is also available in tablet form (e.g. Zintona® capsules, patients with acute symptoms to take 1 capsule 1 h prior to chemotherapy, followed by 2 capsules every 4 h, after symptoms have improved 2 × 1 capsule per day). Teas containing a mix of chamomile (*Matricaria chamomillae*), balm (*Melissa officinalis*) and peppermint (*Mentha piperita*) can also help alleviate symptoms (suggested tea mixture: 20 g chamomile blossoms, 20 g peppermint leaves, 20 g lemon balm leaves, to be mixed with ginger tea if required) [51], as can a combination of angelica, caraway, milk thistle, balm, peppermint, greater celandine and licorice (Iberogast®, 3 × 20 drops per day before meals). Sniffing essential oils such as vanilla, coriander, ginger or mint can also bring relief.

Table 8 Integrative therapies for diarrhea and constipation.

Symptoms	Diarrhea	Constipation
Mind-body medicine		<ul style="list-style-type: none"> ▶ Jacobson's progressive muscle relaxation technique, relaxation methods ▶ Stress reduction
Acupuncture		<ul style="list-style-type: none"> ▶ Stomach 36, Conception Vessel 12, Pericardium 6, Large Intestine 4, and Liver 3
Exercise therapy		<ul style="list-style-type: none"> ▶ Increased exercise (primarily endurance training), e.g. walking
Phytotherapy	<ul style="list-style-type: none"> ▶ Green or black tea ▶ Dried blueberries ▶ Psyllium husks (ready-to-use preparations: Agiocur®, Mucofalk®, Pascomucil®) ▶ Diarrhoesan® (apple pectin + chamomile extract) 	<ul style="list-style-type: none"> ▶ Wheat bran ▶ Flaxseed ▶ Psyllium husks ▶ Aloe vera extract, alder buckthorn bark, rhubarb root or senna leaves
Nutritional therapy	<ul style="list-style-type: none"> ▶ Avoid poorly digestible foods which cause irritation to the mucosa (coffee, milk, raw fruits and vegetables, strong spices, pulses) ▶ Plenty of pectin-rich foods (apples, carrots, bananas), rice, potatoes and rolled oats ▶ Drink plenty of fluids to compensate for fluid loss (tea, mineral-rich vegetable stock, cocoa made with water) ▶ Medicinal clay (Luvos®) 	<ul style="list-style-type: none"> ▶ Fiber-rich foods (rolled oats, fruit, vegetables) ▶ Avoid sugar and sweets ▶ Avoid irregular meals or meals eaten in haste ▶ Laxative foods (e.g. soaked prunes, dates, figs, kiwi fruits) ▶ Increased fluid intake (at least 2 l/day) ▶ Natural flaxseed oil or olive oil ▶ pre- und probiotic foods (e.g. Jerusalem artichokes, yoghurt, etc.)

Diarrhea and constipation

Integrative medicine offers a number of effective therapeutic options to treat diarrhea or constipation (● **Table 8**).

Nutrition and dietary interventions

Traditional household remedies are recommended to treat acute diarrhea; these include very fine medicinal clays for internal use, pectin-rich foods e.g. grated apples, carrot-potato puree, banana-rice puree [52,53]. In addition to water, fluid intake can include tannin-rich teas (rooibos, black and green tea), cocoa made with water, and mineral-rich vegetable broths [42,46].

After excluding other causes, patients with constipation after breast cancer therapy should increase their total fluid intake and the amount of dietary fiber they ingest. Breast cancer patients who are unable to eat many vegetables or fruits can take oat bran, wheat bran or psyllium (*Plantago ovata*) as fiber isolates or soaked dried fruit [54,55]. Natural flaxseed oil or olive oil and pre- and probiotic foodstuffs (e.g. Jerusalem artichokes, yoghurt, etc.) can also be beneficial [56]. In addition to dietary changes, other useful therapies include hydrotherapy and physiotherapy, e.g. colonic irrigation, appropriate exercise, hydropathic treatments [42].

Phytotherapy

There are a number of phytotherapeutic agents available to treat symptoms in patients with acute or subacute diarrhea following tumor therapy. Tannin-rich substances such as black or green tea and dried blueberries (*Myrtilli fructus*) have astringent properties, reduce gastric acid secretions, and prolong intestinal transit times. Proposed treatments include taking 5–10 g dried blueberries every day and only swallowing them after chewing them to a pulp; or, adding 1 teaspoon black tea or ½ teaspoon green to 150 ml boiling water (maximum quantity per day not to exceed 2 l), allowing the mixture to stand for 15–20 min and drinking it throughout the day. Use of psyllium husks (*Psylli semen*) have also been reported to be effective. Mix 10–20 g psyllium with water at a ratio of 1:10 and take up to 3 times per day or use ready-made products (Agiocur®, Mucofalk®, Pascomucil®). Pectins from apples and carrots are also helpful (Diarrhoesan®, Moro's carrot soup) [46,57].

The use of phytotherapeutic bulking agents is recommended to relieve the symptoms of constipation (wheat bran: 1–3 × 2 tablespoons per day; psyllium: 1–2 teaspoons per 1 bowl of soup, no milk; or flaxseeds: take 1–3 × 1 tablespoons together with water) combined with sufficient fluid intake [46]. Laxatives such as Aloe vera extract, alder buckthorn bark, rhubarb root or senna leaves should only be taken for **short term** periods (maximally 1–2 weeks) and under medical supervision, as the loss of calcium resulting from the use of laxatives can increase intestinal hypomotility [42].

Conclusion



The data on acupuncture, phytotherapy and mind-body medicine-based approaches clearly indicate that these therapies can provide effective short-term relief of disease- and therapy-related side effects. These therapies can help to ensure that treatments are tolerated better, improving compliance and allowing treatment to be completed according to medical guidelines. A diagnosis of cancer often brings a traumatic sense of alienation from one's own body and powerlessness. Body-focused mindfulness and meditation exercises, gentle yoga and moderate exercise allow patients to consciously reconnect with their own physicality. The patient's daily diet offers an additional possibility to strengthen the patient's organism and resilience through the optimal provision of all necessary substances. Tried-and-tested means offering relief of side effects caused by cancer treatments are also available. Some of them have been outlined here. As an important part of the patient's life and lifestyle, nutrition can be a source of pleasure, contribute to the patient's quality of life, and act as a tasty "medicine".

As an important part of integrative medicine, phytotherapy is useful to relieve symptoms of tumor disease and side effects of oncologic therapy and to increase patients' quality of life. However, phytotherapy cannot replace supportive therapies based on established medical guidelines. It is important to be aware of possible contraindications and interactions, which requires a good knowledge of phytotherapy. If these principles are respected, phytotherapy can be successfully used as a complementary approach in gynecologic oncology.

Conflict of Interest



None.

References

- Kreienberg R, Albert US, Follmann M et al. Interdisciplinary GoR level III guidelines for the diagnosis, therapy and follow-up care of breast cancer: short version – AWMF Registry No.: 032-0450L AWMF-Register-Nummer: 032-0450L – Kurzversion 3.0, Juli 2012. *Geburtsh Frauenheilk* 2013; 73: 556–583
- Kommission Mamma der Arbeitsgemeinschaft Gynäkologische Onkologie e.V. *Diagnosis and Treatment of Patients with primary and metastatic Breast Cancer*. München: W. Zuckschwerdt Verlag GmbH; 2013
- Maass N, Schutz F, Fasching PA et al. Breast cancer update 2014 – focus on the patient and the tumour. *Geburtsh Frauenheilk* 2015; 75: 170–182
- von Blanckenburg P, Schuricht F, Albert US et al. Optimizing expectations to prevent side effects and enhance quality of life in breast cancer patients undergoing endocrine therapy: study protocol of a randomized controlled trial. *BMC Cancer* 2013; 13: 426
- Hall E, Cameron D, Waters R et al. Comparison of patient reported quality of life and impact of treatment side effects experienced with a taxane-containing regimen and standard anthracycline based chemotherapy for early breast cancer: 6 year results from the UK TACT trial (CRUK/01/001). *Eur J Cancer* 2014; 50: 2375–2389
- Reinisch M, von Minckwitz G, Harbeck N et al. Side effects of standard adjuvant and neoadjuvant chemotherapy regimens according to age groups in primary breast cancer. *Breast Care (Basel)* 2013; 8: 60–66
- Blanchette PS, Pritchard KI. Adjuvant endocrine therapy for breast cancer: longer therapy and the need for personalized treatment—should we treat beyond the data? *Oncology* 2013; 27: 1230–1231
- Bell RJ, Fradkin P, Schwarz M et al. Understanding discontinuation of oral adjuvant endocrine therapy by women with hormone receptor-positive invasive breast cancer nearly 4 years from diagnosis. *Meno-pause* 2013; 20: 15–21
- Wuensch P, Hahne A, Haidinger R et al. Discontinuation and non-adherence to endocrine therapy in breast cancer patients: is lack of communication the decisive factor? *J Cancer Res Clin* 2015; 141: 55–60
- Chlebowski RT, Kim J, Haque R. Adherence to endocrine therapy in breast cancer adjuvant and prevention settings. *Cancer Prev Res* 2014; 7: 378–387
- Huiart L, Ferdynus C, Giorgi R. A meta-regression analysis of the available data on adherence to adjuvant hormonal therapy in breast cancer: summarizing the data for clinicians. *Breast Cancer Res Treat* 2013; 138: 325–328
- Murphy CC, Bartholomew LK, Carpentier MY et al. Adherence to adjuvant hormonal therapy among breast cancer survivors in clinical practice: a systematic review. *Breast Cancer Res Treat* 2012; 134: 459–478
- Fasching PA, Fehm T, Kellner S et al. Evaluation of therapy management and patient compliance in postmenopausal patients with hormone receptor-positive breast cancer receiving letrozole treatment: the EvaluateTM Study. *Geburtsh Frauenheilk* 2014; 74: 1137–1143
- Rohrberg S. Quality of life and cosmetic output after breast-preserving therapy. *Strahlenther Onkol* 2007; 183: 104–105
- Lux MP, Hack CC, Bani MR et al. Operative Therapiestrategien bei der Frau mit Mammakarzinom. *Frauenheilkunde up2date* 2012; 6: 73–95
- Blaes AH, Kreitzer MJ, Torkelson C et al. Nonpharmacologic complementary therapies in symptom management for breast cancer survivors. *Semin Oncol* 2011; 38: 394–402
- Casla S, Hojman P, Marquez-Rodas I et al. Running away from side effects: physical exercise as a complementary intervention for breast cancer patients. *Clin Transl Oncol* 2015; 17: 180–196
- Finnegan-John J, Molassiotis A, Richardson A et al. A systematic review of complementary and alternative medicine interventions for the management of cancer-related fatigue. *Integr Cancer Ther* 2013; 12: 276–290
- Fasching PA, Thiel F, Nicolaisen-Murmann K et al. Association of complementary methods with quality of life and life satisfaction in patients with gynecologic and breast malignancies. *Support Care Cancer* 2007; 15: 1277–1284
- Molassiotis A, Browall M, Milovics L et al. Complementary and alternative medicine use in patients with gynecological cancers in Europe. *Int J Gynecol Cancer* 2006; 16 (Suppl. 1): 219–224
- Shneerson C, Taskila T, Gale N et al. The effect of complementary and alternative medicine on the quality of life of cancer survivors: a systematic review and meta-analyses. *Complement Ther Med* 2013; 21: 417–429
- Hüttner NBM, Hack CC, Hackl J et al. Klassische Naturheilverfahren nach Kneipp in der Gynäkologie und Geburtshilfe. *Frauenheilkunde up2date* 2014; 8: 95–113
- Hack CC, Huttner NB, Fasching PA et al. Development and validation of a standardized questionnaire and standardized diary for use in integrative medicine consultations in gynecologic oncology. *Geburtsh Frauenheilk* 2015; 75: 377–383
- Zainal NZ, Booth S, Huppert FA. The efficacy of mindfulness-based stress reduction on mental health of breast cancer patients: a meta-analysis. *Psychooncology* 2013; 22: 1457–1465
- Cramer H, Lauche R, Paul A et al. Mindfulness-based stress reduction for breast cancer—a systematic review and meta-analysis. *Curr Oncol* 2012; 19: e343–e352
- Lee A, Fan LT. Stimulation of the wrist acupuncture point P6 for preventing postoperative nausea and vomiting. *Cochrane Database Syst Rev* 2009; 2: CD003281
- Ezzo J, Richardson M, Vickers Aea. Acupuncture-point stimulation for chemotherapy-induced nausea or vomiting (Review). *The Cochrane Library* 2010; DOI: 10.1002/14651858
- Posadzki P, Moon TW, Choi TY et al. Acupuncture for cancer-related fatigue: a systematic review of randomized clinical trials. *Support Care Cancer* 2013; 21: 2067–2073
- Ryan JL, Heckler CE, Roscoe JA et al. Ginger (*Zingiber officinale*) reduces acute chemotherapy-induced nausea: a URCC CCOP study of 576 patients. *Support Care Cancer* 2012; 20: 1479–1489
- Pommier P, Gomez F, Sunyach MP et al. Phase III randomized trial of *Calendula officinalis* compared with trolamine for the prevention of acute dermatitis during irradiation for breast cancer. *J Clin Oncol* 2004; 22: 1447–1453
- Kwan ML, Cohn JC, Armer JM et al. Exercise in patients with lymphedema: a systematic review of the contemporary literature. *J Cancer Surviv* 2011; 5: 320–336
- Cormie P, Pumpa K, Galvao DA et al. Is it safe and efficacious for women with lymphedema secondary to breast cancer to lift heavy weights during exercise: a randomised controlled trial. *J Cancer Surviv* 2013; 7: 413–424
- Cassileth BR, Van Zee KJ, Yeung KS et al. Acupuncture in the treatment of upper-limb lymphedema: results of a pilot study. *Cancer* 2013; 119: 2455–2461
- Wolff HH, Kieser M. Hamamelis in children with skin disorders and skin injuries: results of an observational study. *Eur J Pediatr* 2007; 166: 943–948
- Martins MD, Marques MM, Bussadori SK et al. Comparative analysis between *Chamomilla recutita* and corticosteroids on wound healing. An in vitro and in vivo study. *Phytother Res* 2009; 23: 274–278
- Reddy KK, Grossman L, Rogers GS. Common complementary and alternative therapies with potential use in dermatologic surgery: risks and benefits. *J Am Acad Dermatol* 2013; 68: e127–e135
- Worthington HV, Clarkson JE, Bryan G et al. Interventions for preventing oral mucositis for patients with cancer receiving treatment. *Cochrane Database Syst Rev* 2011; 4: CD000978
- Mansour G, Ouda S, Shaker A et al. Clinical efficacy of new aloe vera and myrrh-based oral mucoadhesive gels in the management of minor recurrent aphthous stomatitis: a randomized, double-blind, vehicle-controlled study. *J Oral Pathol Med* 2014; 43: 405–409
- Sahebamee M, Mansourian A, Mohammad MH et al. Comparative efficacy of aloe vera and benzydamine mouthwashes on radiation-induced oral mucositis: a triple-blind, randomised, controlled clinical trial. *Oral Health Prev Dent* 2014; DOI: 10.3290/j.ohpd.a33091
- Karaca H, Bozkurt O, Ozaslan E et al. Positive effects of oral beta-glucan on mucositis and leukopenia in colorectal cancer patients receiving adjuvant FOLFOX-4 combination chemotherapy. *Asian Pac J Cancer Prev* 2014; 15: 3641–3644
- Suryakumar G, Gupta A. Medicinal and therapeutic potential of Sea buckthorn (*Hippophae rhamnoides* L.). *J Ethnopharmacol* 2011; 138: 268–278
- Kraft K. *Lehrbuch Naturheilverfahren*. Stuttgart: Hippokrates; 2010
- Beuth J. Evidence-based complementary oncology: innovative approaches to optimise standard therapy strategies. *Anticancer Res* 2010; 30: 1767–1771

- 44 *Molassiotis A, Yung HP, Yam BM et al.* The effectiveness of progressive muscle relaxation training in managing chemotherapy-induced nausea and vomiting in Chinese breast cancer patients: a randomised controlled trial. *Support Care Cancer* 2002; 10: 237–246
- 45 *Kümmel S, Schütz F.* Ernährung, körperliche Aktivität, komplementäre Therapiemaßnahmen und alternative Möglichkeiten zur Hormonersatztherapie nach Primärbehandlung eines Mammakarzinoms. Aktuelle Empfehlungen zur Prävention, Diagnostik und Therapie primärer und fortgeschrittener Mammakarzinome der AGO. 2013. Online: www.ago-online.de/fileadmin/downloads/leitlinien/mamma/2013_02_Februar/pdfs_D/2013D%2024_Komplementaere%20Therapie.pdf
- 46 *Vogler E, Brinkhaus B.* Kursbuch Naturheilverfahren für die ärztliche Weiterbildung. München: Elsevier, Urban und Fischer; 2013
- 47 *Beer A-M, Aber M.* Leitfaden Naturheilverfahren für die ärztliche Praxis. München: Urban & Fischer; 2011
- 48 *Marx WM, Teleni L, McCarthy AL et al.* Ginger (*Zingiber officinale*) and chemotherapy-induced nausea and vomiting: a systematic literature review. *Nutr Rev* 2013; 71: 245–254
- 49 *Panahi Y, Saadat A, Sahebkar A et al.* Effect of ginger on acute and delayed chemotherapy-induced nausea and vomiting: a pilot, randomized, open-label clinical trial. *Integr Cancer Ther* 2012; 11: 204–211
- 50 *Herdegen T.* Kurzlehrbuch Pharmakologie und Toxikologie. 2. Aufl. Stuttgart: Thieme; 2014
- 51 *Zick SM, Ruffin MT, Lee J et al.* Phase II trial of encapsulated ginger as a treatment for chemotherapy-induced nausea and vomiting. *Support Care Cancer* 2009; 17: 563–572
- 52 *Becker B, Kuhn U, Hardewig-Budny B.* Double-blind, randomized evaluation of clinical efficacy and tolerability of an apple pectin-chamomile extract in children with unspecific diarrhea. *Arzneimittelforschung* 2006; 56: 387–393
- 53 *Triplehorn C, Millard PS.* A rice-based diet with green banana or pectin reduced diarrhea in infants better than a rice-alone diet. *ACP J Club* 2002; 136: 67
- 54 *Attaluri A, Donahoe R, Valetin J et al.* Randomised clinical trial: dried plums (prunes) vs. psyllium for constipation. *Aliment Pharmacol Ther* 2011; 33: 822–828
- 55 *Ashraf W, Park F, Lof J et al.* Effects of psyllium therapy on stool characteristics, colon transit and anorectal function in chronic idiopathic constipation. *Aliment Pharmacol Ther* 1995; 9: 639–647
- 56 *Koebnick C, Wagner I, Leitzmann P et al.* Probiotic beverage containing *Lactobacillus casei* Shirota improves gastrointestinal symptoms in patients with chronic constipation. *Can J Gastroenterol* 2003; 17: 655–659
- 57 *Hackl J, Hüttner N, Hack C et al.* Komplementäre Medizin: Beschwerden der Frau in verschiedenen Lebensphasen lindern. *Frauenheilkunde* up2date 2014; 2: 148–167