Complementary and alternative medicine (CAM) is defined as a group of diverse medical and health care systems, practices and products not presently considered to be part of conventional medicine. Complementary therapies are used together with conventional medicine, whereas alternative medicine is used in place of conventional medicine and is therefore generally not recommended. Integrative medicine combines conventional and CAM treatments where there is evidence of safety and effectiveness. Perhaps a more encompassing and emerging term is complementary and integrative therapies (CIT) because it blends evidence-based complementary therapies with conventional medicine.

People with cancer may use CAM in an effort to: treat their cancer; reduce treatment toxicities; improve cancer related symptoms; foster the immune system; assist with quality of life/coping; prevent recurrence; or treat non-cancer related conditions such as arthritis, heart disease and insomnia.

Types of CAM include nutrition related therapies such as herbal medicines/botanicals, vitamins, minerals, special diets and other natural products including probiotics/enzymes. Non-nutritional types of CAM include mind-body medicines such as meditation, yoga, acupuncture, manipulation and body-based practices such as spinal manipulation and massage, along with other practices such as energy therapy, magnets, art, music and spirituality.

The use of CAM by people with cancer varies significantly in the literature (7% to 91%), partly due to considerable differences in definitions/research methodology, practice disclosure issues and because the popularity of CAM continues to increase. A recent Australian study found that 65% of cancer patients used at least one form of CAM, the most common type being nutritional supplements.

Despite common medical concerns, reports of adverse effects from the use of CAM in this study were rare (3%) and reported perceived benefits common (90%). This study also reported that most patients (90%) agreed that medical doctors should consider learning about CAM to provide appropriate advice to their patients, highlighting the need to assist clinicians to provide evidence-based information.

Another recent study conducted in Asia found that 71% of participants did not discuss their CAM use with their oncologists, mainly because the doctor never asked, 29% did not discuss with any healthcare providers and 64% obtained advice from friends/families. When the issue was discussed, 73% of oncologists did not encourage using CAM, especially during radiotherapy. This study suggested that oncologists should initiate discussion in a non-judgemental manner so as to encourage disclosure and highlighted the need for high quality communication.

Numerous guidelines have been published on communication and decision making regarding CAM. Health professionals should be informed about commonly used CAM and be able to access evidence-based information on potential benefits, harm and interactions, to advise patients accordingly. Health professionals should be proactive in discussing with patients how well they are coping and the use of CAM. Being open minded, using effective communication skills, and working together as a team appear vital for an improved patient journey and outcomes.

Some may question which health professionals’ role/scope of practice includes CIT, and it appears pertinent that all team members play a part and remain up-to-date with professional development in this area. Dietitians are ideally placed to have open dialogue with patients on CIT, especially nutrition related therapies, and to assist with decision making. Basic training for dietitians includes chemistry, physiology, evidence-based practice and...
literature appraisal, communication and counselling skills, and complex decision making skills. In addition, dietitians are well placed members of the multidisciplinary team, liaising regularly with medical, nursing and allied health staff, including pharmacists, and could act as patient advocates to discuss CIT with all team members.

Currently in clinical practice, dietitians are frequently asked by patients for advice on CIT. The aim of this review is to determine whether nutritional supplementation as a CIT during any type of oncology treatment has either improved or adversely affected outcomes for patients. With this increased knowledge, it is proposed that dietitians would feel more comfortable and confident in discussing CIT with their patients.

Search criteria
A literature review was performed including relevant guidelines, summaries (via Up-To-Date, British Medical Journal clinical evidence), synopses, syntheses and systematic reviews (via Evidence-based medicine reviews, Cochrane Library, Pub Med Clinical Queries), and hand searching of reference lists of those articles retrieved. Search terms included ‘cancer’ and any form of oral nutrition supplement eg. vitamins, minerals, micronutrients, herbs, antioxidants, fish oils, carotenoids, flavonoids, or soy, and also included medical subject headings. Inclusions were English language and human studies. Exclusions were parenteral nutrition or enteral nutrition with supplements added, eicosapentaenoic acid in relation to cancer cachexia (as guidelines already published), and primary prevention trials. The hierarchy of evidence was searched up until February 2010 and limited to higher levels of evidence. Grey literature was not within the scope of this review and individual studies for each therapy, animal studies, in vitro studies and anecdotal reports were excluded. Following article retrieval, the evidence was appraised using the National Health and Medical Research Council’s levels and grades of evidence. Each paper was reviewed independently by both authors and consensus was reached on the levels/grades of evidence.

Current data
The search results included eight existing guidelines, one summary of evidence (via Up-To-Date), eight synopses of evidence (via Evidence-based medicine reviews), syntheses of evidence (via Cochrane) and 12 clinical queries (via Pub Med). Hand searching of reference lists identified a further five papers, resulting in a total of 52 articles for inclusion.

Summation of nutrition related complementary therapy evidence was based on four main categories: supplements that had a potential positive effect and no evident harm (see table 1); supplements that had a potential positive effect but side-effects (see table 2); supplements that had no effect (see table 3); and supplements that had potential negative/harmful effects (see table 4).

Table 1: Supplements with potential positive effect and no evident harm.

<table>
<thead>
<tr>
<th>CIT</th>
<th>Potential positive effects</th>
<th>Potential negative/harmful effects</th>
<th>Grade for recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium supplement (1200-2000mg/d) for patients with colorectal adenomas/polyps</td>
<td>Reduces recurrence of this pre-cancerous state.</td>
<td>Nil</td>
<td>B21,22*</td>
</tr>
<tr>
<td>Vitamin E supplementation for breast cancer survivors</td>
<td>Assists with reducing hot flashes especially in those receiving tamoxifen.</td>
<td>Nil</td>
<td>B23*</td>
</tr>
<tr>
<td>Glutamine supplementation in a swish and swallow solution for breast cancer patients receiving anthracycline chemotherapy</td>
<td>Assists with reducing the incidence and severity of oral mucositis.</td>
<td>Nil</td>
<td>C23*</td>
</tr>
<tr>
<td>Melatonin (20mg/d) (pineal gland secretion) taken by patients who have not responded to treatment or do not accept treatment</td>
<td>Longer survival and less weight loss.</td>
<td>Nil</td>
<td>C24,25*</td>
</tr>
<tr>
<td>Melatonin added to chemotherapy (most trials 20mg orally in the evening commencing one week prior to chemotherapy)</td>
<td>Reduces dose-limiting toxicities.</td>
<td>Nil</td>
<td>C26*</td>
</tr>
<tr>
<td>Melatonin added to chemotherapy (most trials 20mg orally in the evening commencing one week prior to chemotherapy)</td>
<td>Reduces dose-limiting toxicities.</td>
<td>Nil</td>
<td>C26*</td>
</tr>
<tr>
<td>Melatonin added to doxorubicin for breast cancer patients</td>
<td>Better clinical response.</td>
<td>Nil</td>
<td>C23*</td>
</tr>
</tbody>
</table>
**Table 1 continued:**

<table>
<thead>
<tr>
<th>CIT</th>
<th>Potential positive effects</th>
<th>Potential negative/harmful effects</th>
<th>Grade for recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levocarnitine (L-carnitine)</td>
<td>Assists with cancer related fatigue.</td>
<td>Nil</td>
<td>D&lt;sup&gt;27*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Selected vegetables or Sun’s soup (vegetable and herb mixtures that contain phytochemicals) for patients who have not responded to treatment or do not accept treatment</td>
<td>Prolongs survival.</td>
<td>Nil</td>
<td>D&lt;sup&gt;34*&lt;/sup&gt;</td>
</tr>
<tr>
<td>Multiple vitamin and mineral supplement (contains approximately 100% of the daily recommended values) taken during and after cancer treatment</td>
<td>Probable benefit, because during these times, it may be difficult to eat a diet with adequate amounts of these micronutrients.</td>
<td>Nil</td>
<td>Expert opinion&lt;sup&gt;27&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

* A= Body of evidence can be trusted to guide practice. B= Body of evidence can be trusted to guide practice in most situations. C= Body of evidence provides some support for the recommendation but care should be taken in its application. D= Body of evidence is weak and recommendation must be applied with caution.<sup>20</sup>

**Table 2: Supplements with potential positive effect but have side effects.**

<table>
<thead>
<tr>
<th>CIT</th>
<th>Potential positive effects</th>
<th>Potential negative/harmful effects</th>
<th>Grade for recommendation</th>
</tr>
</thead>
</table>
| Hydrazine sulphate | Beneficial in terms of anthropometric measures and appetite, but has no benefit on survival. | Associated with hepatorenal failure. | B – anthropometric effects, appetite<sup>24*</sup>  
Expert opinion – potential harmful effects<sup>34*</sup> |
| Arginine taken prior to the start of neoadjuvant chemotherapy for breast cancer | Assists with histopathological response in tumours <6cm. | Insufficient evidence to evaluate the safety. | B – histopathological response<sup>29*</sup>  
Insufficient evidence - safety |
| Vitamin E (400IU/268mg), alone or in combination with beta-carotene, for head and neck cancer patients during radiotherapy | Reduces acute severe side effects of treatment and osteoradionecrosis. | Decreased survival, increased risk of second primary cancers, and increased cancer mortality and recurrence in smokers. There are also concerns about nutrient and drug interactions (with anti-coagulants and anti-hypertensive drugs). | B – positive and harmful effects<sup>17, 29, 30*</sup> |
| Organosulfur compounds (Oltipraz and anethole dithiolethione) for patients with lung cancer or at high risk of lung cancer (i.e. smoking history with dysplastic lesions) | Reduced rate of progression in those with pre-existing dysplastic lesions. | Not recommended as hepatotoxic. Gastrointestinal side effects also documented. | B – progression rate<sup>34*</sup>  
C – potential harmful effects<sup>34*</sup> |
| Organosulfur compounds (Oltipraz and anethole dithiolethione) for patients with lung cancer or at high risk of lung cancer (i.e. smoking history with dysplastic lesions) | Reduced rate of progression in those with pre-existing dysplastic lesions. | Not recommended as hepatotoxic. Gastrointestinal side effects also documented. | B – progression rate<sup>34*</sup>  
C – potential harmful effects<sup>34*</sup> |
## Table 2 continued:

<table>
<thead>
<tr>
<th>CIT</th>
<th>Potential positive effects</th>
<th>Potential negative/harmful effects</th>
<th>Grade for recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antioxidant supplementation (including amifostine, vitamin C, E, Mg) during radiotherapy for pelvic malignancy</td>
<td>Decreases side-effects of radiation</td>
<td>Reduced local tumour control and survival.</td>
<td>C - positive and harmful effects 17,28,30,32x</td>
</tr>
<tr>
<td>Antioxidant supplementation during chemotherapy</td>
<td>Assists with reducing dose limiting toxicities, particularly neurotoxicities, especially vitamin E, melatonin, amifostine, and glutathione. No statistically significant improvements though, have been seen with vitamin C, selenium or beta carotene for lung cancer patients in terms of response, survival, or toxicity, although there is a trend to improvement and further research is needed. No evidence on reducing efficacy of the chemotherapy or influencing response or survival.</td>
<td>Limited evidence concerning safety and interactions.</td>
<td>C – positive effects 17, 24, 25,26,29, 30x Insufficient evidence - safety</td>
</tr>
<tr>
<td>Vitamin A (or the analogue Fenretinide)</td>
<td>Evidence inconclusive, but may improve response, survival, delay disease progression, decrease recurrence and assist with pain/anal ulceration during pelvic radiation. Note there are significant inconsistencies in the literature for different tumour types and menopausal status.</td>
<td>May be associated with increased chemotherapy toxicities and the toxic syndrome hypervitaminosis A.</td>
<td>C – positive effects 17,25,26,32,33 C - toxicities 26x</td>
</tr>
<tr>
<td>Green tea (greater or equal to five cups/day)</td>
<td>Drinking green tea appears to be safe at moderate, regular and habitual use (3-5 cups/ day; 250mg/day catechins) and may be associated with lower recurrence and longer disease free period for cancer patients, especially in the early stages of tumour development.</td>
<td>Intake greater than this allowance has been associated with emesis, abdominal pain, flatulence, insomnia, diarrhoea, dizziness, confusion and tachyarrhythmia. Preclinical trials also suggest that green tea may inhibit the effect of bortezomib used to treat multiple myeloma.</td>
<td>C – positive effects 24,34,35,36 D – potential harmful effects 24,34,36x</td>
</tr>
<tr>
<td>Honey (topical application) in head and neck cancer patients receiving radiotherapy</td>
<td>Prevents mouth sores.</td>
<td>Interference with effectiveness of radiation has not been evaluated.</td>
<td>C – mouth sores 22x Insufficient evidence – safety</td>
</tr>
<tr>
<td>Mistletoe</td>
<td>Improves quality of life, fatigue, immune function, therapy effects and survival however there is no evidence to support routine use.</td>
<td>Usually well tolerated, depending on the dose; care should be taken to monitor for allergic reactions including anaphylactic shock and numerous other adverse side-effects.</td>
<td>C – positive and harmful effects 24,27,34,37,38x</td>
</tr>
</tbody>
</table>
### Table 2 continued:

<p>| <strong>Mistletoe</strong> | Improves quality of life, fatigue, immune function, therapy effects and survival however there is no evidence to support routine use. | Usually well tolerated, depending on the dose; care should be taken to monitor for allergic reactions including anaphylactic shock and numerous other adverse side-effects. | C – positive and harmful effects²⁴,²⁷,³⁴,³⁷,³⁸* |
| <strong>PC-SPES (PC=prostate cancer; SPES=Latin for hope; mixture of Chinese and one American herb)</strong> | Could be associated with reduced levels of prostate specific antigen (PSA) and soft tissue shrinkage, however evidence on its efficacy is inconclusive. | There have also been multiple cases of adverse events eg. toxicity of acquired bleeding tendency and also concerns about contamination of ingredients resulting in FDA product recall in 2002. | C – positive effects¹⁷, ²⁴* |
| <strong>Individualised Chinese herbs prescribed by a qualified herbalist</strong> | Reduces nausea and improves quality of life and bone marrow function in some studies, especially breast and colon cancer. Experts also believe, and some studies have shown, Chinese herbs may assist with alleviating the toxic side-effects caused by chemotherapy, improving the rates of remission and reducing short-term mortality, however evidence is inconsistent. | Limited information is available on safety. | C – nausea, quality of life, marrow function²⁴, ³⁸, ⁴⁰* Insufficient evidence - safety |
| <strong>Ginseng</strong> | Decreases fatigue. | Experts have advised that it is also associated with side-effects such as diarrhoea, headaches, hypertension, insomnia, nausea, and anticoagulant effects, and should be used cautiously with chemotherapy and discouraged completely for breast and endometrial cancer patients as it may stimulate tumour growth. | C – fatigue¹⁷, ²⁴, ⁴¹* |
| <strong>Coenzyme Q10 (or vitamin Q10, ubiquinone, or ubidecarenone) during chemotherapy for leukaemia</strong> | Might protect from cardiotoxicity. | Interacts with warfarin and insulin. | D - cardiotoxicity²⁴, ²⁶* Expert opinion – potential harmful effects²⁴* |
| <strong>Calcium and vitamin D supplementation in prostate cancer patients.</strong> | May have a role in improving metastatic pain and muscle strength and reducing progression of disease. | Care must be taken with calciciuric side-effects and close monitoring is needed. | D – positive effects²², ⁴³, ⁴⁴* Expert opinion and case reports – potential harmful effects ⁴⁴* |
| <strong>Chinese herb astragalus membranaceous (Huangqi compound) added to chemotherapy</strong> | May be associated with a reduced risk of death, an improved response rate and a better performance status, increased white cells, and reduced nausea/vomiting, especially for colorectal cancer, however evidence is inconclusive. | Limited information is available on safety. | D - positive effects ²⁴, ⁴⁰* Insufficient evidence - safety |</p>
<table>
<thead>
<tr>
<th>Supplement</th>
<th>Evidence-based statement</th>
<th>Grade for recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HESA-A (herbal mixture) or Ai-Tong-Ping capsules (herbal supplement)</td>
<td>Currently there is insufficient evidence, however preliminary data suggests there may be a benefit to relieve cancer pain. Limited information is available on safety.</td>
<td>D - pain&lt;sup&gt;16, 17&lt;/sup&gt;  Insufficient evidence - safety</td>
</tr>
<tr>
<td>Chinese herb Hauchansu, added to chemotherapy</td>
<td>Might improve leukopenia caused by chemotherapy, but does not improve rate of short-term remission. Limited information is available on safety.</td>
<td>D – positive effects&lt;sup&gt;16, 17, 24, 41&lt;/sup&gt;  Insufficient evidence - safety</td>
</tr>
<tr>
<td>St John’s wort</td>
<td>Might assist in skin cancer management. Concerns about safety, interaction with medications metabolised by CYP3A4 cytochrome, nausea and hypersensitivity reactions during chemotherapy, and potential altered levels of drugs (through effects on metabolism eg. cytochrome P450).</td>
<td>D – positive effects&lt;sup&gt;16, 17, 24, 41&lt;/sup&gt;  Expert opinion – potential harmful effects&lt;sup&gt;16, 17, 24, 41&lt;/sup&gt;  D - altered levels of drugs&lt;sup&gt;17&lt;/sup&gt;</td>
</tr>
<tr>
<td>Botanical agents and herbs within the context of clinical trials for cancer patients who have not responded to treatment or do not accept treatment</td>
<td>May provide benefits such as immunomodulatory effects, reduced side-effects and toxicities, and improved quality of life. Some evidence of drug-supplement interaction, antiplatelet effects, gastrointestinal effects and toxicities.</td>
<td>D – positive effects&lt;sup&gt;16, 24, 47&lt;/sup&gt;  Expert opinion – potential harmful effects&lt;sup&gt;16, 24, 47&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

* A= Body of evidence can be trusted to guide practice. B= Body of evidence can be trusted to guide practice in most situations. C= Body of evidence provides some support for the recommendation, but care should be taken in its application. D= Body of evidence is weak and recommendation must be applied with caution.<sup>20</sup>
Table 4: Supplements with potential negative/harmful effects.

<table>
<thead>
<tr>
<th>CIT</th>
<th>Potential positive effects</th>
<th>Potential negative/harmful effects</th>
<th>Grade for recommendation</th>
</tr>
</thead>
</table>
| High dose supplements of vitamins, minerals and other bioactive compounds ie. >100% of daily value | Micronutrient supplements do not have any specific benefits.                               | Should be avoided by cancer patients receiving treatment and survivors as they can be harmful or toxic. Patients should check with medical professionals regarding specific current evidence, side effects, and potential interactions. | A – no benefit – no benefit
Expert opinion – potential harmful effects 16, 28, 50 |
| Antioxidant supplementation for primary or secondary prevention of lung and other cancers during and after cancer treatment | No evidence of benefit.                                                                    | May increase some cancers eg. bladder and lung. No evidence of an association with mortality.      | A – incidence 51, 51, 52
B – mortality 52 |
| Beta carotene supplementation for lung cancer patients (or individuals with a smoking history >20 pack years) | Not recommended.                                                                          | Associated with increased rates of lung cancer.                                                  | A – lung cancer rates 31 |
| Phyto-oestrogens to treat breast cancer                              | No evidence that it eases the symptoms such as hot flashes.                               | Some experts believe it might stimulate tumour growth, interact with tamoxifen and should be avoided in breast/endometrial cancers, however no adverse events in prostate cancer have been documented. | A – hot flashes 16, 17, 23, 34
Expert opinion – potential harmful effects 16, 17, 34 |
| Fish oils/omega 3/ eicosapentaenoic acid (EPA)                       | No evidence of benefit for cancer related symptoms (cancer cachexia excluded) such as appetite, fatigue, nausea, lean body mass, intake, infections. | Potential drug-nutrient interactions eg. herbal supplements, anticoagulants, antihypertensives. | B – no benefit 24, 29
Expert opinion – potential harmful effects 24, 29 |
| Shark cartilage                                                     | No evidence of benefit on survival.                                                        | Adverse events have been documented eg. emesis, constipation, hepatitis, and hypercalcaemia. Some experts also believe it to be a potential inhibitor of angiogenesis and should therefore be avoided in pregnancy, the perioperative period, and vascular insufficiency. | B – survival 17, 24
Expert opinion and case reports – potential harmful effects 17, 24 |
| Vitamin E (670-1000mg oral) for treatment of chronic radiation induced fibrosis for breast cancer patients | No evidence of benefit however research inconclusive.                                      | There are concerns about drug-nutrient interactions eg. Anticoagulants.                            | C – benefit 17, 24
Expert opinion – potential harmful effects 17, 24 |
| Thymus extract                                                      | Research is inconclusive, but suggests it does not improve chemotherapy effects or reduce tumour growth despite suggestion from limited low quality studies. | Care must be taken as it can result in severe allergic reactions and severe infections when injected. | D – benefit 24
Expert opinion and case reports – potential harmful effects 24 |
| Valerian                                                            | Not recommended.                                                                          | Causes toxicity during chemotherapy.                                                             | Expert opinion – potential harmful effects 24, 41 |
| Chinese herb Aristolochia fangchi                                  | Not recommended.                                                                          | Potentially nephrotoxic and may be associated with increased risk of transitory epithelium cancer. | Expert opinion – potential harmful effects 34 |
As seen in Table 4, there is strong evidence (Grade A) concerning a small number of nutrition-related therapies. High dose supplements of vitamins, minerals, and other bioactive compounds do not have any specific benefits seen in the research (Grade A) and there is expert opinion concerning potential negative/harmful effects. In addition, phyto-oestrogens to treat breast cancer have shown no benefit on easing symptoms such as hot flashes (Grade A) and some experts believe it might stimulate tumour growth and should be avoided in breast and endometrial cancers. Of great concern is that antioxidant supplementation during and after cancer treatment may increase the incidence of some cancers (Grade A), including bladder and lung (with beta carotene).

**Implications**

It appears that evidence concerning nutrition-related CIT during oncology treatment is generally quite weak, with a few exceptions. Specifically, high dose supplements and phyto-oestrogens have shown no benefits, while antioxidants may increase the incidence of some cancers. These conclusions may be due to the lack of large randomised control trials and the sheer number of variables that need consideration in this area of research. These include supplement type/dose/timing, tumour stream and stage, treatment type, and other medications/treatments that potentially could interact. These multiple factors also make it difficult to extrapolate broad recommendations for any one type of supplement.

Much of the research conducted to date is not sufficiently detailed to provide strong conclusions for practice. For example, much of the research around antioxidants does not outline specifics and as further evidence comes to light, these factors appear pertinent. Some antioxidants including vitamin E, melatonin, amifostine and glutathione supplementation during chemotherapy may assist with reducing dose limiting toxicities. However, antioxidant supplementation during radiotherapy may be associated with reduced local tumour control and survival, especially vitamin E with head and neck cancer.

The implication from these findings for oncology dietitians in practice is that they should be as specific as possible when reviewing the research and encourage patients to consider all factors relating to supplement type, tumour stream and treatment plan, in decision making. There is also an ethical obligation to ensure patients are well informed, particularly where there is strong evidence of supplements with potential negative/harmful effects, and to clearly emphasise the importance of specificity. Additionally, personal circumstances need to be considered and advice should be individualised.
It appears that many of the recommendations in the literature concerning potential side-effects, toxicities and interactions are based on expert opinion. One would think this is due to the ethical difficulties in conducting randomised trials in this area, especially if there is a theoretical risk of harm. There is a tendency for health professionals to discourage patients from taking supplements altogether if there is any risk of harm. However, it is worthwhile considering the basis for the expert opinion and the relevant applicability to individuals’ circumstances. For example, is the risk a theoretical risk, has it been seen in animal studies only, or reported in individual participants in human case studies, or in research outcomes.

Traditionally, CIT has probably been outside of the scope of practice for most dietitians. However, with the rise of evidence-based therapies such as medical nutrition therapy and more recently functional nutrition therapy, where active nutrients, ingredients and functional foods are used in a therapeutic manner to address nutritional deficiencies and nutrition-related problems, dietitians need to be approachable and keep abreast of current developments and trends, in order to guide patients through what can be a very complex decision making process. Oncology dietitians should endeavour to include CIT in their regular professional development in this fast growing area.

Patients will often weigh up the benefits and risks themselves. For example, a patient suffering from severe fatigue may choose to take ginseng despite expert advice that it may cause emesis, headaches and interact with anticoagulation medications. The requirement for oncology dietitians is to encourage patients to consider the basis for reported potential harm, and to liaise with other members of the multidisciplinary team who may be more knowledgeable in this area, such as medical staff and pharmacists. There are also a number of databases/websites available. Individual supplements may be assessed for potential interactions/side-effects. Patients may thereby be provided with useful information to assist in decision making. Examples include the Natural Medicines Comprehensive Database,61 the Memorial Sloan-Kettering Cancer Centre website,62 the National Centre for Complementary and Alternative Medicine website,63 the Office of Cancer Complementary and Alternative Medicine website,58 and the Therapeutic Goods Administration website.59

Additionally, dietitians should refer patients to qualified CIT practitioners, however this may be more difficult in Australia than in other countries throughout Asia, America and Europe where CIT practitioners often work side-by-side with the traditional multidisciplinary team. CIT practitioners should have completed the relevant education and be a member of a professional association. For example, an association with high entry standards for nutraphaths/herbalists is the National Herbalists Association of Australia. In addition, some nutraphaths have completed degrees or post doctoral study and it would be ideal for dietitians to determine if any such practitioners are located in their area. There is also the Australian Acupuncture and Chinese Medicine Association and the Chinese Medicine Registration Board of Victoria. Chinese Medicine Practitioners will soon be included in the National Registration Accreditation Scheme in 2012.60 Ideally, people should meet a few CIT practitioners in their local area to find out about their background, experience and training, and then build a referral list to provide diversity. In addition, a referral letter including medical history and treatment plan, medications, and dietary recommendations should be provided to increase patient safety.

It would also be beneficial for patients and clinicians alike, if more oncology treatment centres throughout Australia would look to integrate qualified CIT practitioners into the more traditional multidisciplinary team structure. One example is the SolarisCare Cancer Support Centre located within the Sir Charles Gardiner Hospital, Western Australia, which opened in 2001 to provide free information, support and supervised complementary therapies in a drop-in community centre style service on a tertiary hospital campus.61 This innovative service, focused on non-nutritional CIT, has demonstrated a positive impact on quality of life and symptom distress.62 Throughout the world, there are numerous other examples of similar integrative services.

The limitations of this review should be acknowledged and considered when interpreting the findings. The scope and methodology excluded non-English publications and due to the use of CIT, for example in parts of Asia and Europe, potentially important information may have been omitted. In addition, individual studies for each therapy and grey literature such as animal studies, in vitro studies and anecdotal reports were also excluded. As this is an emerging area of research, the grey literature could potentially highlight important beneficial findings to explore in higher level studies. Some proponents of CIT may not have the medical model background in evidence-based practice, and may not have conducted research in areas they believe from experience to show benefit.

It appears dietitians are well placed to guide oncology patients through decision making regarding CIT and that a collaborative effort by the entire multidisciplinary team is needed regarding potential interactions, interpreting the literature and making recommendations for practice. The traditional oncology multidisciplinary team may need to reconsider its scope to engage with CIT practitioners. Such an integrative approach would need cooperation between practitioners in relation to individual patients and the need to support the patient using a sympathetic but evidence-based approach, rather than simply producing barriers which may result in non-disclosure by the patients and a missed opportunity to integrate therapies safely.

As a result of this literature review, the authors plan to integrate the findings into ‘The Integrative Medicine Drug-Complementary Medicine Project’, sponsored by the Complementary and Integrative Therapies Interest Group of the Clinical Oncological Society of Australia. This group comprises pharmacists, nutraphaths, herbalists, dietitians, nurses and oncologists. It seeks to undertake comprehensive reviews of the literature to establish the level of evidence suggesting an interaction between three to five key chemotherapeutic agents and the most commonly used herbal and nutritional supplements in Australia. It is hoped that by working together we will be able to foster respect between different practitioners, promote consistent messages to patients, provide more widely available guidelines in this area, and identify clearer evidence-based recommendations for practice to improve the patient journey.
Conclusion

This review found a significant volume of evidence concerning nutrition related complementary therapies, however the strength of the evidence is generally weak. In addition, there are multiple variables that need to be considered in the research, making it difficult to extrapolate recommendations for any one type of supplement. The challenge remains to provide strong evidence to support CIT as part of mainstream treatment therapies. Collaborative engagement between the proponents of CIT and established multidisciplinary teams is needed to enable well designed randomised control trials that include large numbers of patients and relevant clinical endpoints. Further research is also needed in order to map with confidence relevant potential interactions and side-effects.

References


