

Complementary & Alternative Medicine: An Alternative Lifestyle or Real Science?



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Background

Complementary and Alternative Medicine (CAM) has become increasingly popular in the US and worldwide as a treatment for common medical conditions. One study^{1,2} reported that the U.S. public spent an estimated \$36 billion to \$47 billion on CAM therapies in 1997. Of this amount, between \$12 billion and \$20 billion was paid out-of-pocket for the services of professional CAM health care providers. These fees are more than what the public paid out-of-pocket for all hospitalizations in 1997 and about half of what it paid for all out-of-pocket physician services. Nearly \$5 billion of out-of-pocket spending was on herbal products. However, despite all of this, it is estimated that patients either inform their doctor or discuss these therapies with them less than 40% of the time.

This lecture will focus on the various types of CAM practiced and the science and evidence behind the efficacy of these therapies. Much of the information has been obtained from the National Center for Complementary and Alternative Medicine (NCCAM), a branch of the NIH and one the US government's lead bureaus for scientific research on CAM.

Definitions of CAM

NCCAM defines CAM as "a multitude of diverse practices, medical systems, health care systems, and products that are not presently considered to be part of conventional medicine." However, others have debated this definition pointing out that a CAM therapy does not change its definition when it is proven to be safe and effective and used in conventional medicine. The Institute of Medicine defined CAM in 1997 as "a broad domain of resources that encompasses health systems, modalities, and practices and their accompanying theories and beliefs, other than those intrinsic to the dominant health system of a particular society or culture in a given historical period."

Many consider conventional medicine as practiced by physicians who either hold a MD or DO, physical therapists, psychologists, and registered nurses. Although this is the accepted definition, there are many health care providers who practice both conventional medicine and CAM. One of the barriers to CAM being accepted by many physicians is that there is limited evidence on this topic with regards to treatment efficacy, side effects, or outcomes. In addition, the FDA regulates the CAM treatments as either vitamins or herbal supplements and does not hold them to the same standards as traditional medications or therapies. Some of the terms used in CAM are defined below.

Complementary medicine: therapy that is used together with conventional medicine. An example is the use of acupuncture used in conjunction with chemotherapy for chemotherapy-related nausea.

Alternative medicine: therapy that is used in place of conventional medicine. An example is the use of saw palmetto for prostate cancer instead of hormonal therapy or radiation therapy.

Integrative (integrated) medicine: a combination of both CAM and conventional medicine where some high-quality evidence exists for both.

CAM is further divided into four domains by NCCAM, although there can be some overlap between some of the domains. Whole medical systems (Homeopathic medicine, Naturopathic medicine, Ayurvedic medicine, Traditional Chinese medicine) are built upon complete systems of theory and practice and can sometimes involve multiple domains.

Mind-Body Medicine- defined by NCCAM as focusing on the interactions among the brain, mind, body, and behavior, and on the powerful ways in which emotional, mental, social, spiritual, and behavioral factors can directly affect health. It regards as fundamental an approach that respects and enhances each person's capacity for self-knowledge and self-care, and it emphasizes techniques that are grounded in this approach. Some of these considered as CAM in the past have now become mainstream such as patient support groups and cognitive behavioral therapy.

- Meditation
- Guided imagery
- Relaxation techniques
- Biofeedback
- Hypnosis

Biologically based practices- includes (but is not limited to) botanicals, animal-derived extracts, vitamins, minerals, fatty acids, amino acids, proteins, prebiotics and probiotics found in foods, dietary supplements, whole diets, and functional foods.

- Herbal supplements
- Dietary supplements
- Natural therapies

Manipulative and Body-based practices- practice by manipulating or moving one or more parts of the body.

- Chiropractic
- Osteopathic manipulation
- Massage therapy

Energy medicine- involves the use of energy fields to improve symptoms.

- ***Biofield therapies:*** affect energy fields that surround and penetrate the human body by either applying pressure or manipulating the body. These are also known as putative therapies.
 - Qigong
 - Reiki
 - Therapeutic touch
 - Acupuncture
- ***Bioelectricmagnetic based therapy:*** uses unconventional electromagnetic fields such as pulsed fields, magnetic fields, or alternating fields. This is also known as veritable energies.

CAM Statistics

How popular is CAM use?

The most comprehensive and reliable data to look at Americans' use of CAM was released in May 2004 ³ by NCCAM and National Center for Health Statistics (NCHS). This was done after a previous survey of nearly 31,000 adults aged 18 years or older. The survey asked about all the main therapies and reported the statistics with and without prayer and megavitamin use.

Figure 1 below shows that nearly 36% of adults in the US treat with CAM and this number increases to 62% when prayer or megavitamin use is included. CAM is used more by women, people with higher education or hospitalized within the past year, and former smokers. Figure 2 below also shows the frequent use of CAM in minorities.

Figure 1. CAM Use by U.S. Adults

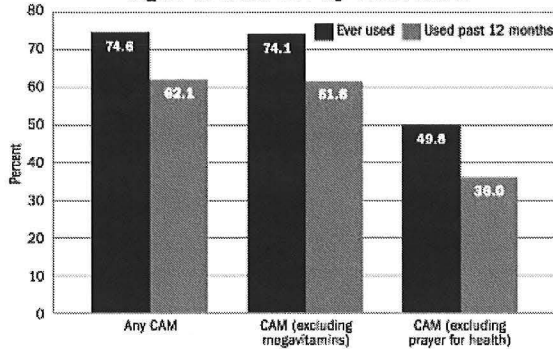
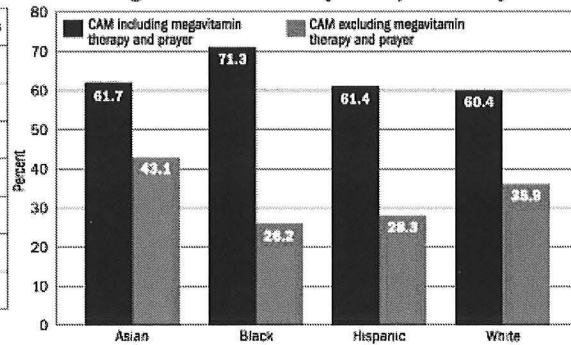


Figure 2. CAM Use by Race/Ethnicity



What is the most popular form of CAM?

Figure 3 below shows that mind-body medicine is used the most followed by herbal/vitamin therapy in the US for multiple medical conditions. Figure 4 below shows that prayer is still the most popular individual therapy used. However, there is a lot of controversy with this because it is not clear whether patients are using prayer for the treatment of their health conditions or as part of daily life. As a result, most consider herbal and dietary supplements as the most popular form of CAM. Figure 5 below shows the most common natural products used from the survey with Echinacea being the most popular.

Figure 3. CAM Use by Domain and Whole Medical Systems

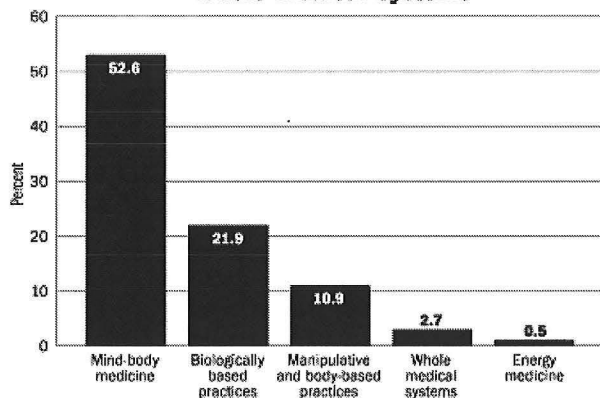


Figure 4. 10 Most Common CAM Therapies

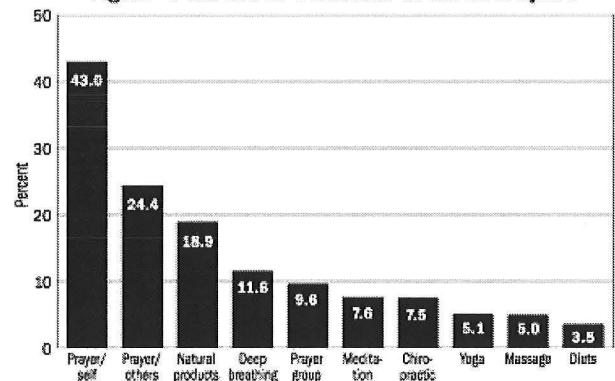
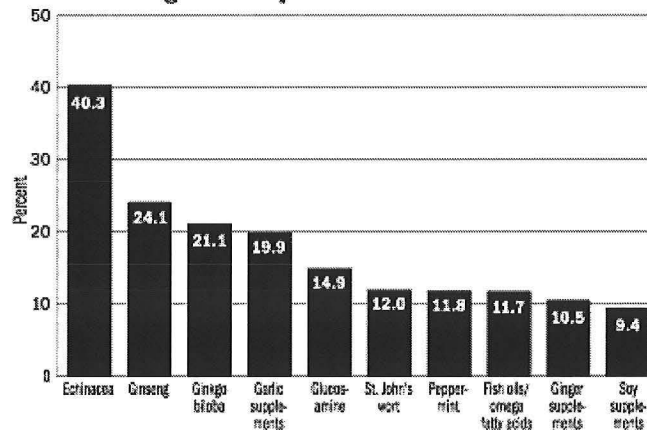


Figure 5. Top 10 Natural Products*

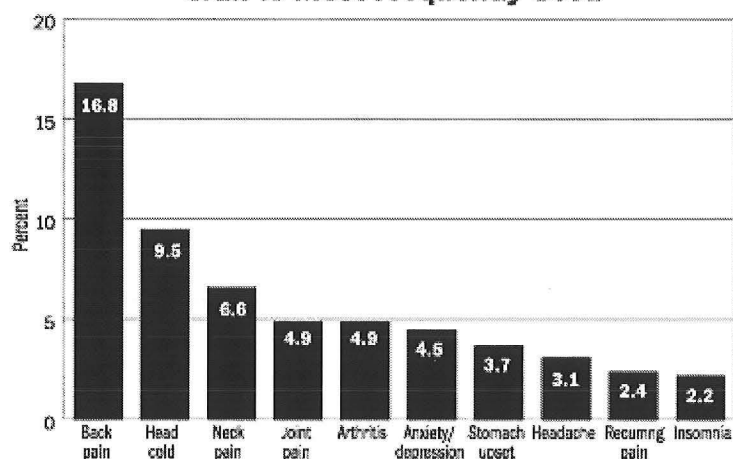


*The percentage for each product represents its rate of use among U.S. adults who use natural products.

Why do people use CAM?

The figure below from the survey shows the main reasons that patients went to CAM for their conditions. The most popular reason is for musculoskeletal pain due to multiple reasons, and most patients used both CAM and conventional medicine together at the same time.

Figure 6. Disease/Condition for Which CAM Is Most Frequently Used*



*These figures exclude the use of megavitamin therapy and prayer.

Theory and Evidence for CAM

Mind-Body Medicine

Theory

Mind-Body Medicine⁸⁰ focuses on the interactions between the brain, mind, body, and behavior. The theory emphasizes strategies that promote health such as relaxation, hypnosis, meditation, yoga, biofeedback, group support, and spirituality. Some of these such as group therapy are accepted as part of conventional therapy. As noted before, prayer was used by 45% of the US population for health reasons in the survey done in 2002. Yoga (such as Bikram yoga) is also becoming increasingly popular.

Mind healing dates back to both traditional Chinese medicine and Ayurvedic medicine in India over 2000 years ago. Hippocrates also recognized many natural remedies as early as 400 B.C. as an integrated approach. This continued in many cultures until the 16th century when there developed a separation between science and mind-healing. As technology advanced, many scientists believed that diseases of the mind were not real unless there was a scientific explanation. The term “placebo effect” was observed shortly after World War II when many soldiers were treated effectively for pain with saline injections as medications were in short supply⁴.

Science

One of the more studied areas of mind-body medicine is the effects of meditation and the placebo response. Meditation is defined as a conscious mental process that leads to a sequence of physiological changes to relax the body^{82, 83}. Functional MRI of the brain has shown that meditation activates the areas of the brain that are involved in attention and control of the autonomic nervous system, which possibly explains some of the relaxing effects of meditation⁵. Another study showed that meditation causes significant increases in left-sided brain activity leading to positive emotional states. These patients were also shown to have

higher antibody titers to influenza vaccine, with the suggestion that the positive moods enhance the immune system⁶.

The placebo effect is thought to be regulated by the patient's expectations. If the individual seems to have an expected outcome, then their conscious part of the brain controls their response and activates a physiological response. One randomized study of Parkinson's patients showed that the patients given a placebo had an increased endogenous release of dopamine seen on PET scans⁷. This seems to indicate that dopamine, which is known to be important in reinforcing and rewarding conditions, may play an important role in the placebo response. Other studies have shown similar data with the placebo effect⁸¹.

Evidence

There is considerable evidence that psychological factors can influence disease outcomes. The figure below⁷⁷ shows data from a meta-analysis looking at the positive effects of mind-body medicine on various medical conditions. Another study showed that patients with positive attitude and mind-healing had an enhanced cardiac rehab experience and actually had lower all-cause mortality and fewer cardiac events at 2 years⁸. Another study showed that mind-body healing also reduced pain in patients with osteoarthritis and the number of office visits⁹. The results are somewhat more mixed in other areas such as headache, low-back pain, and chronic pain management. There is also evidence from multiple studies that improving the mood through mind-body techniques such as meditation reduced chemotherapy-induced nausea, vomiting, and pain¹⁰.

Clinical Condition	Level of Evidence	Source of Evidence (Total Number of Patients)	Implications for Practice
After myocardial infarction	Strong	Two positive meta-analyses ^{43,52} (12,879)	In addition to the current emphasis on exercise and nutrition, MBTs (that focus on the development of self-regulation skills, such as relaxation and the management of anger, hostility, and general stress reactivity) should be included as part of cardiac rehabilitation
Cancer symptoms (disease and treatment related)	Strong	Positive results from 2 meta-analyses ^{53,71} (~6,166)	MBTs (eg, relaxation, hypnosis, supportive group therapy) should be strongly considered as adjunctive therapy for cancer patients, given these therapies' showed efficacy in improving mood, quality of life, and coping with both the disease and treatment-related side effects
Incontinence disorders	Strong	Positive results from 1 meta-analysis ⁹⁸ ; AHCPR guidelines (240)	Biofeedback-assisted muscle retraining in the treatment of urinary incontinence. Can also be effective for fecal incontinence, although additional research is needed
Surgical outcomes	Strong	Positive findings from 2 meta-analyses ^{42,50} (~6,904)	MBTs (eg, relaxation, guided imagery, hypnosis, instructional interventions) can be recommended as part of presurgical preparation, although additional research is needed to determine the relative efficacy and cost-effectiveness of these different approaches
Insomnia	Strong	Positive results from meta-analyses (4,009); NIH Consensus Panel	MBTs (eg, muscle relaxation, cognitive-behavioral and behavioral therapies, such as stimulus control) should be considered in the treatment of insomnia. Additional research is required to determine how MBTs might be effectively combined with pharmacotherapy
Headache	Strong	Positive results from 2	The combination of relaxation and thermal

		meta-analyses ^{46,49} (~3,083)	biofeedback can be recommended as treatment for recurrent migraine, while the use of relaxation or muscle biofeedback can be recommended as adjunctive or stand-alone therapies for tension headaches
Chronic low back pain	Strong	Positive findings from 1 high-quality meta-analysis ⁶² (1,349)	Multi-component MBTs that include some combination of stress management, coping skills training, or cognitive restructuring should be strongly considered as adjunctive therapies in medical management of chronic low back pain
Osteoarthritis, rheumatoid arthritis	Moderate-strong	Positive findings from meta-analyses ^{36,61} (though effect sizes generally small and frequently diminished with time) (4,337)	Multimodal MBTs (that combine education with such approaches as relaxation, imagery, biofeedback, and cognitive behavioral counseling) should be considered as potentially effective adjunctive treatments for osteoarthritis and rheumatoid arthritis
Hypertension	Moderate	Positive results from 1 meta-analysis (1,651) ⁵¹ but contradictory findings in 2 others ^{44,108}	MBTs (particularly multi-component as opposed to single-component interventions, such as stand-alone relaxation therapies) can be potentially useful adjuncts in the medical management of hypertension

In the area of immunity, it has been theorized that one's mood also regulates how susceptible one is to infection. A positive mood tends to improve cell immunity and hence reduce the frequency of infections and also the duration of symptoms. One study showed that following exposure to a respiratory virus in the lab, individuals with a higher stress level or negative moods reported more severe illness than the patients with a positive mood or lower stress level¹¹. This has also been seen in some other longitudinal studies¹².

Conclusion: There appears to be evidence to support that mind-body medicine does have a physiological basis for why it works through mechanisms in the CNS. The clinical evidence also seems to suggest that this could be an effective modality to use in some patients, particularly in the areas of pain management and some other chronic pain conditions. More studies need to be done to look at outcomes as this approach may not be effective in every patient.

Energy Medicine

Theory

Energy medicine is divided into veritable energies and putative energies. Veritable involves using mechanical vibrations and electromagnetic forces such as sound, laser beams, and other rays. These practitioners use specific measurable wavelengths and frequencies to treat patients.

Putative energy has the belief that every human is infused with a subtle form of energy that goes by different names such as *qi* (Chinese traditional medicine), *prana* (Ayurvedic medicine), *ki* (Japanese Kampo system), *mana*, and *fohat*. It is believed that this energy flows throughout the entire body, although this has not been measured. Therapists claim that they can sense or feel this energy and manipulate it to improve a patient's health.

Energy medicine dates back more than 2000 years when practitioners in Asia believed that health is maintained by a balance of these various energies was necessary to maintain health and used various methods to restore them. Although there has been little quantitative measurements done of this energy, this is a growing field in the US.

Science

There have been some studies looking at the various energy fields to understand the mechanism of how this might work. One study¹³ showed that static magnetic fields can cause some vasoconstriction of vessels that are dilated and vasodilatation of vessels that are constricted. This could be a possible mechanism for how this may work in treating ischemia or edema. Other modalities, such as sound therapy and light therapy, have elaborate theories of how they may work but very limited scientific proof.

Putative energy involves methods such as acupuncture, Qi Gong, therapeutic touch, and healing touch among others. Acupuncture seems to be the most studied but its actual mechanism of action is yet to be proven. This method involves the insertion of very fine and solid needles through the skin at specific points on the body with the idea of manipulating Qi. It is thought that stimulation of the different nerve center causes local neurotransmitters to be released that then promote natural endorphins and reduce pain. Therapeutic touch has also been looked at and some studies¹⁴⁻¹⁶ suggests that there is a decrease in gamma rays emitted from the patient when they undergo therapy and that this may stabilize the energy field around the patient. However, these studies had questionable methods and techniques.

Evidence

Out of all CAM therapies, acupuncture has been the most rigorously studied. Acupuncture has been shown to be effective in many patients with chronic pain, but the studies in the other modalities are somewhat mixed. A large meta-analyses⁷⁸ from 22 randomized trials in 2005 showed that needle acupuncture was effective to sham acupuncture in treating chronic low back pain but not as effective in treating acute low back pain. A randomized study from Germany⁷⁹ in 2007 compared needle acupuncture vs. conventional guideline-based therapy vs. sham acupuncture in 1162 patients aged 18 to 86 years with chronic low back pain. The study followed these patients for 6 months and looked at pain relief as the primary outcome. The results showed that patients had more pain relief in the needle group (47%) than the sham group (44%) vs. conventional therapy (27%).

Some of the data also consist mainly of anecdotal reports¹⁷, such as the use of Qi Gong improving conditions ranging from HTN to asthma. Multiple studies have looked at the effects of therapeutic touch, once again with predominantly anecdotal evidence with mixed results in the treatment of various medical conditions¹⁸.

Conclusion: Energy medicine also likely has some therapeutic effects on selected individuals, but the scientific evidence is limited and mainly consists of anecdotal evidence rather than randomized trials. It is difficult to know what the right control group is in these interventions. More studies need to be done to better validate the current data and look at outcomes.

Manipulative and Body-based practices

Theory

Manipulative and body-based practices include chiropractic manipulation, massage therapy, osteopathic manipulation, and a host of other lesser used techniques. In 1997, it was estimated that adults in the US visited a chiropractor 192 million times and a massage therapist 114 million times¹⁹. These therapies work on the theory that manipulating the various structures of the body can restore health. Many of these techniques date back over many hundreds of years in countries such as China, Egypt, and India. Although many of these practitioners are trained in anatomy and physiology, there is some variability to how they use these techniques. Each practitioner can use different methods ranging from rapid movements to slower

applications of force on the body. There are many states that have licensure procedures for these practitioners.

Science

Most of the animal studies looking at mechanisms have focused mainly on chiropractic therapy. Some studies²⁰ have shown that spinal manipulation causes increased activity in the primary afferent neurons in paraspinal tissue that likely modulates pain processing in the spinal cord. Other studies²¹ have also shown that there may be a release of endogenous opioids and oxytocin when patients undergo massage therapy. Other studies²² have suggested that manipulation or massage therapy could cause increased serotonin levels, cortisol levels, or other hormones that could affect pain perception. However, the mechanism for these therapies' benefit is still poorly understood.

Evidence

There have been numerous clinical trials looking at spinal manipulation for low back pain and they have shown that this can be an effective modality for both acute and chronic low back pain^{23, 24}. Other studies have not shown significant improvement in other conditions such as asthma, hypertension, or menstrual pain. Most of these studies are small, poorly designed, or lacked statistical power. There have also been some studies²⁵ to show that massage therapy did reduce low back pain, but these were also rather small studies. Although there have been some reports of rare side effects, these therapies are generally well tolerated.

Despite this limited evidence, most insurers in the US do provide some reimbursement for chiropractic care but not massage therapy. One study²⁶ found that overall health care expenditures were lower for patients who also received chiropractor care, but other studies have failed to show a significant cost benefit when compared with conventional physical therapy²⁷. Patients, however, have reported high levels of satisfaction with going to chiropractors and massage therapists in some patient satisfaction studies²⁸.

Conclusion: Manipulative medicine appears to be very effective in many patients with back pain and appears to be cost-effective in some cases as part of a treatment plan. However, the mechanism is somewhat poorly understood and more studies are needed in this area.

Biologically Based Practices

Theory

Biologically based-practices include the use of botanicals, vitamins, minerals, whole diets, probiotics, and other similar substances. According to the Dietary Supplement Health and Education Act (DSHEA) of 1994, Congress defined a dietary supplement as the following.

1. Product taken by mouth that contains a "dietary ingredient" intended to supplement the diet.
2. The ingredients may be vitamins, minerals, herbs or other botanicals, amino acids, or similar substances.
3. They can occur in many forms such as tablets, caplets, gelcaps, liquids, or powders.

In 2007, the FDA passed a final rule regarding dietary supplements. The regulations establish the current good manufacturing practices needed to ensure quality throughout the manufacturing, packaging, labeling, and storing of dietary supplements. The final rule includes requirements for establishing quality control procedures, designing and constructing manufacturing plants, and testing ingredients and the finished product. It also includes requirements for recordkeeping and handling consumer product complaints. Manufacturers are

required to evaluate the identity, purity, strength, and composition of their dietary supplements. If dietary supplements contain contaminants or do not contain the dietary ingredient they are represented to contain, FDA would consider those products to be adulterated or misbranded.

Botanical medicines have been used in the past by many cultures, but the use in the US has increased dramatically in the past two decades and it is estimated the dietary supplements accounted for \$18.7 billion in sales in 2002. There was a similar trend for functional foods sold over the counter such as soy, cranberries, etc. Appendices 2-4 list the main dietary supplements and vitamins that evidence exists for according to NCCAM.

Science & Evidence

There have been numerous studies looking at the mechanisms of many of these supplements, but they have been small and also poorly designed with many flaws. Given the extensive number of substances, there are currently many trials ongoing at NCCAM looking at various herbs and disease processes. Appendices 2-4 summarize many of the studies that have been looked at for the large number of supplements. Most of the studies are either small, lack power for statistical significance, or have shown conflicting results. The FDA is unable to regulate each substance given the large number but has now worked with some of the other government agencies such as NCCAM to look at the ongoing trials. Physicians must also be aware of the many possible herb-drug interactions.

Conclusion: There appears to be some evidence that many of the dietary supplements have some limited benefit without complete understanding of the mechanism of action. Vitamins have not been shown to have a large benefit but do not appear harmful given in small doses. Megadoses of individual vitamins may lead to some harmful effects.

Whole Medical Systems

As mentioned earlier, whole medical systems use a combination of the four domains above and are practiced by individual cultures throughout the world. The two main ones in the eastern part of the world include Traditional Chinese medicine and Ayurvedic medicine from India. The two main ones in the western part of the world include homeopathy and naturopathy. There are many other systems in other parts of the world, but the discussion below will focus on these four main systems. The evidence and theories for each of the modalities used has been discussed earlier.

Traditional Chinese Medicine (TCM)

TCM dates back to 200 B.C. and different forms have been seen in Korea, Japan, and Vietnam in addition to China. The theory states that the body is a delicate balance between opposing forces: yin and yang. Yin represents the cold, slow, and passive principles. Yang represents the hot, excited, and active principles. An imbalance between these two forces leads to a blockage of the flow of *qi* (vital energy) and blood along the pathways known as meridians. The belief further states that harmony brings health, well-being, and sustainability. Disharmony leads to illness, disease, and collapse.

Practitioners will use a variety of techniques such as acupuncture, massage, and herbs to bring this balance back to the body and restore harmony. The *Chinese Materia Medica*⁶² is a standard reference book that provides information on the substances used in Chinese herbal medicine. There have not been many studies looking at the effectiveness of this system other than anecdotal evidence as noted before, but there does appear to be some benefit in some

individuals. There is currently no licensure procedure in the US for practicing TCM or Ayurvedic medicine.

Ayurvedic Medicine

Ayurveda means “the science of life” and is a healing system that is popular in India. The theory is based on a balance between the body, mind, and spirit to maintain harmony. The system uses a combination of diet, exercise, meditation as described before, herbs, massage, and controlled breathing. Humans are considered to be a microcosm of nature and consist of five basic elements: ether (space), air, fire, water, and earth. These elements combine in the body and manifest themselves as three humors or doshas known as *vata*, *pitta*, and *kapha*. These doshas govern all the major functions in the body and Ayurveda seeks to bring these doshas back into harmony.

In many conditions, the practitioner may apply oils (mixed with herbs) on the skin and tries to restore harmony. The practitioner can also use teas, salves, tablets, etc. instead of the oils. This is then followed by a variety of techniques including lifestyle changes, ayurvedic medicinal preparations, meditation, and sometimes yoga. These techniques have been used for many diseases in India including diabetes, cardiovascular disease, and neurological conditions. There have been many studies⁶³ looking at ayurvedic medicine versus conventional medicine, and there appears to be some benefit in some individuals. However, these studies again were small and lacked an adequate sample size for statistical power.

Naturopathy

Naturopathy (“nature disease”) originates from Europe and views disease as a change in the way that the body naturally heals itself. The system emphasizes the body should naturally heal itself and restore health as well as treat disease. This system is practiced widely in Europe, Australia, New Zealand, and Canada with the main principles below. Only 14 states currently license naturopaths in the U.S.

- a. The healing power of nature
- b. Identification and treatment of the cause of disease
- c. The concept of “first do no harm”
- d. The doctor as teacher
- e. Treatment of the whole person
- f. Prevention

The techniques used include herbs, TCM, acupuncture, massage, joint manipulation, and lifestyle changes. Treatment is focused on the cause of disease rather than on the symptoms. The practitioner can use conventional methods to diagnose the disease such as x-rays, lab tests, and physical exam. However, they typically do not use conventional drugs or other therapies to treat the patient. There are very few studies done in this area and they have shown mixed results. One study found that Echinacea was not effective in treating URI⁶⁴ while another showed that an otic solution containing Echinacea with Vitamin C reduced the ear pain in otitis media⁶⁵. There are some studies ongoing to evaluate some of these therapies.

Homeopathy

Homeopathy was founded by Samuel Christian Hahnemann, a German physician in the late 1700s. This system goes by the “principle of similars,” which states that one can choose a

therapy based on how closely the remedy matches the symptoms of a patient's disease. Dr. Hahnemann gave healthy volunteers repeated doses of common natural remedies and observed the symptoms that they developed, a procedure known as "proving" or "human pathogenic trial." He would then see patients and give the remedies that matched the symptoms produced by the disease. This approach is also known as "like cures like." In other words, a small dose of the same substance that causes the symptoms of a cold can also cure the symptoms of a cold. Homeopathy is quite popular in Europe and the official physicians of the Royal Family in England are homeopaths. Famous medical schools in the U.S. such as University of Michigan and UCSF started out teaching some homeopathic principles.

The solutions used in homeopathic remedies are usually water and sometimes alcohol mixed with tiny amounts of certain plants, minerals, animal products, or chemicals. This technique has been used to treat arthritis, asthma, colds, flu, allergies, cancer, and some other chronic conditions. There is a lot of skepticism in the scientific community about this system since the remedies are given in such minute doses. The evidence is quite scant and contradictory in this area, but some systematic reviews and meta-analyses⁶⁶⁻⁷⁰ did show some positive findings in some disease conditions. However, the general consensus in the medical community is that these therapies lack sufficient evidence to support their use. More evidence is needed in this area to further understand how effective this system is.

Future Directions for Healthcare Providers/Patients

Why should physicians learn about CAM?

As mentioned earlier, CAM is widely used by patients and this is mainly market driven and includes evidence-based practices to outright quackery with possible risks. If physicians are not informed about CAM, we leave our patients uninformed and without any medical guidance. Patients many times do not inform their doctors of these therapies because the perception in the scientific community is mixed regarding CAM.

This learning should start as early in their training as possible. A report in 1995 estimated that CAM was taught in 45 of 125 of medical schools and 28% of Family Medicine residency programs in the US. This number increased in a 2002 report to 98 of 125 medical schools. Most of the schools offered this information as elective courses taught by either CAM practitioners or providers who prescribe CAM therapies. Many schools and residency programs now are looking at ways to incorporate CAM teaching into their curriculum with a sample listed below.

1. focus on critical thinking and critical reading of the literature
2. identify thematic content and express the chosen topics in clear, concise learning objectives
3. include an experiential component
4. promote a willingness to communicate professionally with CAM clinicians
5. teach students to talk with patients about alternative therapies.

How can healthcare providers and patients learn about CAM?

There are multiple areas that one can go to learn evidence-based information about CAM therapies. Two main sources about published randomized control trials include Medline and The Cochrane Library. In 2001, Medline introduced a "CAM" subject subset and tries to group the evidence related to CAM in this area. The Cochrane Complementary Medicine Field, based at the University of Maryland Center for Integrative Medicine, coordinates all of CAM-related data in the Cochrane Library. It is estimated that the Cochrane Library has well over

150 CAM-related systemic reviews. Pub Med is also a good resource for many CAM articles similar to Medline. Another good resource for both patients and physicians is the NCCAM website that attempts to keep up with the current clinical knowledge on CAM. AHRQ (Agency for Healthcare Research and Quality), the leading federal agency on health care quality, also prepares evidence reports in the form of systematic reviews. It is foreseeable in the near future that CAM will be taught in medical schools and residency programs, evaluated more in randomized clinical trials, and possibly become its own subspecialty as geriatrics and HIV/AIDS medicine has become in the past 20 years with its own accreditation, etc.

Despite all of these resources, it is still sometimes difficult to know which brand of supplement is better than other or which one has the ingredients that it claims to have. This is up to each manufacturer by the good manufacturing practices, and there may be more regulation in the future by the FDA that will make it easier for both patients and physicians.

Summary

CAM is a very popular choice for patients worldwide for a wide array of conditions. Physicians need to be well informed about the advantages and disadvantages if using the various modalities such as herbs, supplements, meditation, etc. The mechanisms for many of these are not well understood, but the clinical evidence does show some benefit for many of these therapies and health systems in certain conditions. Whether MDs agree or disagree with the CAM therapies used by patients, it is their obligation to be better informed so that one can counsel patients with respect to both benefit and also side effects. Future evidence being sponsored by NCCAM and other departments should help physicians become more informed and better counsel patients.

Appendix 1- CAM Therapies, Practices, Systems (IOM Report 2005)

Acupressure. Applying pressure to certain meridian points, similar to acupuncture, but without the use of needles.

Acupuncture. The Chinese art of stimulating the pathways of energy (14 main meridians plus branches) by puncturing, pressing, heating, using electrical current, or using herbal medicines.

Alexander Technique. Originally a technique used for respiratory re-education, now a comprehensive technique of psychophysical re-education to improve physical functioning.

Anthroposophy. A health care system defined by Rudolf Steiner. The study of the wisdom of the human being, inner development, and careful observation to more accurately reflect the patient as a whole and unique human being.

Apitherapy (Bee Venom). The use of bee products from the European honey bee to promote health and healing.

Applied Biomechanics. The use of biomechanical principals of human motion and structure of the human body as well as the laws of mechanics to prevent and treat injuries. Most commonly used in sports medicines.

Applied Kinesiology. A form of patient biofeedback. A muscle is tested to discover allergies, weaknesses in the body. Any muscle in the body may be used to test when the patient is exposed to a substance or a thought.

Aromatherapy. The skilled and controlled use of essential oils, volatile liquids distilled from plants, shrubs, trees, flowers, roots and seeds. They contain oxygenating molecules that transport the nutrients to cells of the body.

Art Therapy. Increase awareness of self; cope with symptoms, stress, and traumatic experiences; and enhance cognitive abilities through the practice of creating art. Includes talking about it with a trained art therapist.

Autogenic Therapy. The practice of "passive concentration," a state of alert but detached awareness which allows the trainee to break through whatever excess stress is present. Western form of meditation.

Aversion Therapy. Exposure to an unpleasant stimuli while engaged in the targeted behavior. Usually associated with alcoholism and smoking.

Ayurvedic Medicine. A traditional health care system practiced in India. The "Science of Life." People are categorized into three basic constitutional types, Pitta, Kapha, Vata, with many different subdivisions. Treatment of the same illness will be different based on the type determined by the physician.

Bach Flower Remedies. Restoration of balance to disrupted states of mind, addresses the underlying emotional causes of disease using flowering plants.

Balneotherapy. Practice of healing using bath preparations. Essential oils in a preparation that will dilute in water.

Biofeedback. A treatment technique in which people train their bodies to respond to specific signals in their body. Used often to lower blood pressure and to slow heart rates.

Body Electronics. Preparing a client nutritionally and then using a specialized form of sustained acupressure.

Bowen Therapy. Gentle moves on the skin or through light clothing designed to result in overall relaxation, allowing the body to recharge, and cleanse itself.

Breathwork

Holotropic. Experiential method combining deep relaxation, expanded breathing, music, art and focused energy work.

Transformational. Directed breathing exercises to massage internal organs and tone diaphragm and abdominal muscles. The high volume of oxygen absorbed by the lungs cleanses and revitalizes the organ systems.

Cell Therapy (not done in U.S.). Injection of healthy cellular material into the body to assist the body in its natural ability to heal.

Cheirology (Palmistry). The art of hand analysis. A combination of the ancient Chinese Buddhist hand analysis and the best of traditional Western palmistry. A dialogue and touch therapy.

Chelation Therapy. A slow drip IV injection of a synthetic amino acid used for the purpose of removing plaque and calcium deposits from arteries.

Chiropractic. Based on a procedure that evaluates causative factors in the biomechanical and structural derangements of the spine that may effect the nervous system and organs.

Chromatotherapy. See Color Therapy.

Luminous. The use of colors of the light spectrum to treat illness at three levels, at the ailment, at the eye level, and at the acupuncture point level.

Molecular. Using the same wavelength as luminous, but derived from matter. Used on the skin or orally.

Coaching. The art of working with individuals to eliminate barriers in reaching their personal and professional goals, includes dialogue and "homework assignments."

Cognitive Therapy. Short-term, focused psychotherapy. Used in treatment of depression, anxiety, anger, marital conflict, loneliness, and panic, among others.

Colon Hydrotherapy. The cleansing of the entire large intestine with a gentle enema-type system using filtered water and gentle abdominal massage.

Color Therapy. Known also as chromatotherapy, based on the concept that colors vibrate at different frequencies and can stimulate different responses in a person and the use of specific colors in a person's environment may promote balance and healing.

Contact Reflex Analysis (CRA). A natural system for analyzing the body's structural, physical, and nutritional needs. Most commonly used by chiropractors.

Craniosacral Therapy. This therapy focuses on the eight bones of the cranial vault in conjunction with the spine and sacrum, and the cerebrospinal fluid. Light touch creates relaxation and a sense of energy moving within your body.

Crystal Therapy (Gemstone Therapy). The practice of using crystals of different minerals to treat various disharmonies in the body.

Cupping (Moxibustion). The placement of burning mugwort, a plant containing complex volatile oils such as camphor, at acupuncture points to stimulate qi and healing.

Detoxification Therapy. The various processes used to rid the body of toxins absorbed from the atmosphere, food, soil, and water.

Didjeridoo. A form of sound therapy, this aboriginal wind instrument has been used for healing for 40,000 years. Circular breathing supported by the sound frequency reaches deep into the subconscious.

Dream Therapy. The interpretation of dreams to assist in addressing problems and support resolution.

Ear Candling. Ear candles or cones of unbleached cotton or linen strips dipped in paraffin, beeswax, or herbs are burned, sending smoke and warmth inside the ear creating a vacuum effect to loosen buildup of wax and other debris.

Electrotherapy (TENS). Transcutaneous Electrical Nerve Stimulation. Any form of medical treatment that uses electricity as a cure or relief. For example, as a way of stimulating nerves and connected muscles.

Emotional Freedom Technique (Tapping). Also called Thought Field Therapy. A brief, effective psychotherapy for the rapid resolution of negative emotions; tapping with your fingertips on the acupuncture meridian points while repeating some specific phrases.

Energy Field Medicine. Seven major Chakras, vortexes of energy within the human body, serve as a network of mind-body-spiritual energies.

Enzyme Therapy. Diet supplemented with plant-derived enzymes and pancreatic enzymes either independent of each other or in combinations determined by the prescriber.

Essences Therapy. Similar to Bach flower remedies. Water-based infusion activated by natural sunlight, stabilized usually with brandy.

Eye Movement Desensitization and Reprocessing (EMDR). The treatment of patients using guided eye movement while mentally focused on whatever mental image, negative thought, or body sensation the client wishes to address.

Fasting (Cleansing). The complete abstinence from all substances except purified water in an environment of total rest. Benefits include the promotion of detoxification and it gives the digestive system a rest.

Feldenkrais Method. A blend of science and aesthetics, uses two approaches to healing. "Awareness Through Movement," directing students to move in specific ways related to early basic movements, and "Functional Integration," movement custom tailored to the unique needs of each student.

Gerson Therapy. Combination of vigorous detoxification with nutrition aimed at restoring the body's natural immunity and healing power.

Gestalt Therapy. Challenging a client with questions that increase awareness of feelings and so develop a stronger ability to face day-to-day situations and problems.

Guided Imagery. The use of relaxation and mental visualization to improve mood and or physical well-being.

Healing Touch. An energy based therapeutic approach to healing. Using hands-on and energy-based techniques to balance and align the human energy field.

Hellerwork. Similar to Rolfing. Stress-reducing body realignment, which adds verbal dialogue and emotional release to connective tissue bodywork and body movement education.

Herbal Medicine. The use of any plants seeds, berries, roots, leaves, bark, or flowers for medicinal purposes.

Homeopathy. A philosophy of treatment "That which is similar ends suffering." Toxic remedies from raw materials and plants are administered in a highly diluted form to stimulate the body's own healing mechanisms.

Humor Therapy. Using laughter to release endorphins, increasing the body's ability to heal itself.

Huna. The exploration of body, mind, and spirit through shamanism and ancient Hawaiian healing. Increasing your own spirituality and healing powers.

Hydrogen Peroxide Therapy. Based on the theory, when injected into the vein, hydrogen peroxide is converted to water and singlet oxygen, an oxidizing agent, which inhibits growth of bacteria and viruses and enhances enzymatic metabolism.

Hydrotherapy. The placement of alternating heat and cold water to the skin in order to redirect the flow of blood.

Hyperbaric Oxygen Therapy. The delivery of pure oxygen at two to three times that of sea level. Among its uses is the treatment of leg ulcers that do not respond to other therapies.

Hyperthermia. Heat treatment to selectively destroy cancer cells using heating rods, microwaves, ultra sound, thermal blankets lasers, or pyrogens to induce fever.

Hypnotherapy. Intense focused concentration with partial or complete exclusion of awareness of peripheral phenomenon. Among its clinical uses are the treatment of pain, habit disorders, nausea, relaxation, and anxiety.

Iridology. The iris of the eye reveals abnormal conditions of the tissues, organs, and glands of the body. Diagnosis of disease is not made, but conditions of various parts of the body are revealed.

Jaffe-Mellor Technique (JMT). A bioenergetic technique utilizing kinesiology and acupressure to relieve pain and symptoms associated with osteoarthritis, RA, and other complex health disorders.

Jin Shin Jyutsu. A gentle oriental art practiced by placing fingertips (over clothing) on (26) designated "safety energy locks" to harmonize and restore balance.

Juice Therapy. The use of raw vegetables and fruits turned into juice to make it easier to assimilate. Taken on an empty stomach, it is absorbed within 15 minutes.

Kegel Exercises. A form of biofeedback exercise. Pelvic floor exercises focus on women's abdominal organs and muscles.

Kirlian Photography. Photography of the body's auras and energy flow.

Light Therapy. Use of light, from natural sun exposure to high-tech sophisticated forms of light-assisted psychotherapy to treat physical and psychological disorders.

Macrobiotics. Changing or managing your diet for spiritual and healthful ends. Diet excludes meats and emphasizes whole grains.

Magnet Therapy. Use of natural and manmade magnets to enhance energy fields around and within the body to enhance healing.

Manual Lymphatic Drainage (MLD). A highly systematic method of stimulating lymph flow through the entire body using a range of specialized and gentle rhythmic pumping techniques. This stimulates the lymphatic vessels that carry substances vital to the defense of the body and removes waste products.

Marma Therapy. A form of healing massage focusing on 108 points on the body where vein, artery, tendon, bone, and flesh meet.

Massage Therapy. A general term for a wide range of therapeutic techniques involving the manipulation of muscles and soft tissues, including kneading, rubbing, tapping, friction, vigorous or relaxing, deep or superficial.

Medical Intuitive. The utilization of a focused, intuitive instinct to "diagnose" or "read" energetic and frequency information in and around the human body.

Meditation. Relaxation and transformation therapy focusing mind on specific healing thoughts.

Transcendental Meditation™. A program specifically designed by Maharishi Mahesh Yogi.

Mind-Body Medicine. A philosophy and a system of health practices that is based on the concept that the mind and the body work together for healing.

Music Therapy. The prescribed use of music by a qualified person to effect positive changes in the psychological, physical, cognitive, or social functioning of individuals with health or educational problems.

NAET (Nambudripad's Allergy Elimination Therapy). A combination of disciplines including kinesiology and acupressure designed to identify and eliminate allergies. The treatment stimulates acupuncture points along the spine while patient holds an allergen.

Naprapathy. Manipulation, mobilization, and soft tissue methods similar in some ways to chiropractic, but specializes in health problems that originate in the muscles, tendons, and ligaments.

Nasal Irrigation. Saline solution (noniodized salt, baking soda, and water) inhaled through nostril to clear mucus and reduce cough caused by post nasal drip.

Naturopathic Medicine. A system of primary health care which uses a holistic natural approach to health and healing, emphasizing the treatment of disease through stimulation, enhancement, and support of the inherent healing capacity of the person.

Naturopathy. The basic philosophy of Naturopathic Medicine, practiced by both licensed Naturopathic Doctors and other CAM practitioners.

Neuro-Linguistic Programming (NLP). The study of the structure of subjective experience and what can be calculated from that, predicated upon the belief that all behavior has structure.

Neuromuscular Therapy (Trigger Point Myotherapy). Consists of alternating levels of concentrated pressure on the areas of muscle spasm using fingers, knuckles, or elbows.

Nutritional Therapy. Use of food and supplements to encourage the body's own natural healing.

Orthomolecular Medicine. The prescription of large doses of vitamins and minerals, based on the philosophy that each individual is biochemically unique and therefore nutritional deficiencies affect certain people more than others.

Ozone-Oxygen Therapy (Bio-oxidative Therapy). Small amounts of hydrogen peroxide and ozone are administered into the body as medicine.

Panchakarma Therapy. Ayurvedic herbal remedies designed to balance and cleanse, restore harmony.

Past Life Therapy. Treatment and release of phobias and emotional blockages through a regression process which explores past life traumas.

Pet Therapy. Animals of all sizes and breeds respond well to CAM therapies that stimulate their own natural powers; sometimes they are more responsive than human beings.

Pilates. Systematic practice of specific exercises coupled with focused breathing patterns.

Polarity. A system based on the belief that the flow and balance of energy in the body is the underlying foundation of health. The body's own electrical flow to muscles and organs is opened through a process of bodywork, diet, exercise and self-awareness.

Pranic Healing. Comprehensive system of subtle energy healing that utilized "prana" in balancing, harmonizing, and transforming the body's energy process.

Prayer. Some cultures and religions believe that prayer is the most powerful medicine.

Prolotherapy. Nonsurgical ligament reconstruction, treatment for chronic pain. Dextrose solution is injected into ligament or tendon where it attaches to the bone; inflammation increases blood supply and stimulates body's natural healing ability.

QiGong. Literally means "energy cultivation"; refers to exercises aimed at bringing about harmony, as well as improving health and longevity. Healing methods involve breathing, movement, the mind, and the eyes.

Radiance Technique (TRT). 7-degree transcendental energy system similar to Reiki.

Rapid Eye Technology. A transformational technology that facilitates healing on all levels. The client follows a lighted wand with their eyes, while the therapist gives verbal clues designed to release physical, emotional, or mental stress.

Reflexology. Noninvasive acupressure of the hands and feet. Points on the feet and hands correspond to various zones and organs throughout the body. Precise pressure on these reflex points stimulates energy and releases blockages to the specific area of pain or illness.

Reiki. An ancient Tibetan tradition, hand symbols and breathing draw in and manipulate energy forces to effect a balance. Power source energy travels through the Reiki practitioner into the client's body.

Relaxation Therapy. A variety of physical, mental, spiritual, and recreational methods of relaxing the body and the mind.

Rolfing (Somatic Ontology, Structural Integration). The Rolfer slowly stretches and repositions the body's supportive wrappings, called fascia, with firm and gently directed pressure, to restore normal length and elasticity to the network of deep connective fibers.

Rosen Method. Mind, bodywork, and movement; combines emotional psychotherapy with physical awareness.

Rubinfeld Synergy. A holistic therapy that integrates body, mind, spirit and emotions using gentle touch, along with verbal dialogue, active listening, Gestalt Process, imagery, metaphor, movement, and humor.

Shamanism. Traditional native healing systems practiced throughout the world. Archaic magico-religious phenomenon in which the shaman may use fire, wind, or magical flight as part of a healing ceremony.

Shiatsu. A type of bodywork from Japan that uses acupuncture energy meridians to activate and balance the body's energy (chi).

Spiritual Healing. A healing philosophy incorporating the concept of spiritual energy as a healing force; using prayer, meditation, individual, or group spiritual resources and other methods of focusing thought energy.

Stress Management. Based on the belief that stress creates a "dis-ease" climate within the body, by reducing stress, the body's own natural healing resources are enhanced, such as the immune system.

Tai Chi. Balanced gentle movements, incorporating a combination of meditation and breathing, are designed to dissolve physical and karmic layers of tension in both the physical body and the energy body, and to open up the spiritual space inside.

TAO. A philosophy often related to CAM practices. The definition of Tao is "the way," "the law"; the rule of Tao is living in total harmony with the natural world.

Therapeutic Touch. Hands do not touch body, but perform smoothing and soothing movements above the body, "massaging" the human energy field surrounding body; involving mind, body, emotion, and spirit.

Traditional Chinese Medicine (Oriental Medicine). The ancient (and modern) theory of medicine with unique diagnostic methods and systematic approach includes medication, pharmacology, herbology, acupuncture, massage, and QiGong.

Transsage. The use of therapeutic massage, deep relaxation (hypnosis), guided imagery, metaphors, and affirmations with the goal of increasing mental focus.

Trager Method. Based on the theory that patterns of stiffness and aging exist more in the unconscious mind than in the tissues, this method re-educates the body/mind to release old holding patterns that limit us physically and mentally. Rhythmic movement and soothing rocking is used.

Transpersonal Psychology. The extension of psychological studies into consciousness studies, spiritual inquiry, body-mind relationships, and transformations.

Trepanation. A small hole is drilled in the skull (solely in the bone, not entering the brain), to allow an expansion window in the brain to permanently regain its youth.

Tuina. 2000-year-old Chinese massage, like acupuncture (without needles) Tuina works with the Qi (chi) energy of patients.

Urani Medicine. Traditional herbal healing system of ancient Persia and modern India, Australia, and other countries.

Urine Therapy. Using (your own) urine externally and internally to provide nutrients, purify blood and tissue, and signal what is out of balance.

Visualization. Similar to Guided Imagery. Creative visualization is the art of sending an image to your subconscious mind, and your subconscious mind will begin to create what it "sees."

Visceral Manipulation. Based on the specific placement of soft manual force to encourage normal mobility, tone, and inherent tissue motion of the viscera and their connective tissues.

Vitamin Therapy. Use of vitamins, minerals, enzymes, amino acids, fatty acids, and other nutritional support.

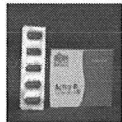



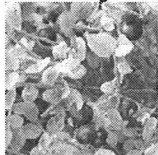
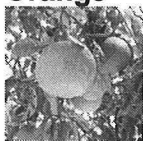
Watsu. A creative blend of meridian stretches, Indian chakra work, acupressure, Zen Sciatsu, and yoga movements performed in warm water.

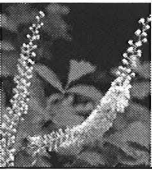
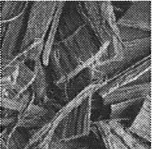
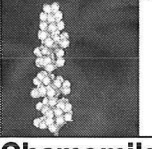

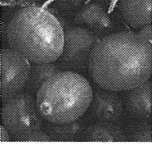


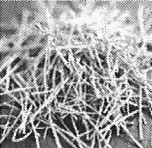
Wave Work. A psycho-spiritual process for integration, based on deeper teachings of Yoga. Using breath and awareness of sensation to allow an organic shift in consciousness.

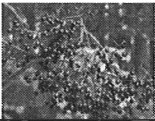

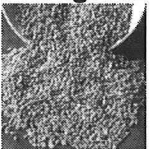

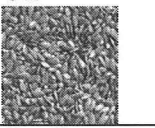

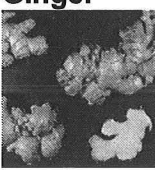
Yoga. A general term for a wide range of body-mind exercise practices, traditionally referred to as the art of "yoking" or hooking up the lower consciousness with the higher consciousness. Combines breathing, movement, meditation, and a sequence of sound to align, purify, and promote a healthy flexible body.


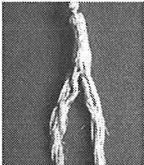

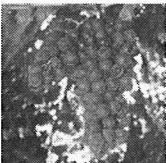



Zero Balancing. Hands-on body-mind system to align body energy with body's physical structure.


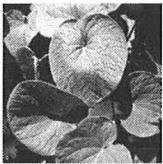
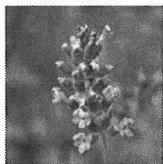

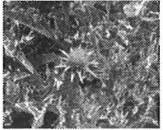


Appendix 2- Selected Dietary Supplements²⁹



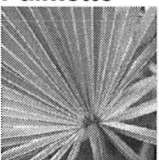



<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Actra-Rx 	Yilishen	Sildenafil (Viagra)	Erectile dysfunction and to enhance sexual function	Hypotension	FDA warns not to buy or use this compound
Aloe Vera 	-Aloe -Burn plant -Lily of the desert -Elephant's gall	18	-Heal wounds -Orally as laxative, DM, asthma, seizures, osteoarthritis -Topically for burns, sunburns, osteoarthritis	<u>Oral use</u> -Abdominal cramps -Diarrhea -Hypoglycemia No significant side effects with topical use	-FDA approved for natural food flavoring -Current studies show aloe may help burns and abrasions - No data to support other uses
Andro 	Andro	Androstenedione	-Enhance athletic performance - Increase muscle mass	<u>Men</u> - Testicular atrophy - breast tissue development - impotence <u>Women</u> - baldness - facial hair - increased risk for breast cancer, endometrial cancer - blood clots	- FDA encouraging Congress to classify these as controlled substance - FDA asking companies to stop distributing these supplements
Astragalus 	-Bei qi - Huang qi - Ogi -Hwanggi - Milk vetch	Used in soups with other herbs such as ginseng	Chinese medicine used for: - Enhance immune system - Chronic hepatitis - Adjunctive therapy in cancer - URI and common colds - Heart disease	-Unknown since it is given with other herbs - May interact with other medications	- Small prelim studies show possible benefit for heart and immune system - Studies not well designed
Bilberry 	- European blueberry - Whortleberry - Huckleberry	- Can eat fruit - Leaves can be made into extracts or teas	- Diarrhea - Eye problems - Menstrual cramps - Varicose veins - Venous insufficiency - Diabetes	- None known	- No current data to suggest treatment
Bitter Orange 	- Seville orange - Zhi shi	- Can use oil from fruit or leaves - Contains synephrine (similar to ephedra)	- Nausea - Indigestion - Constipation - GERD - Nasal congestion - Weight loss - Ringworm/ athlete's foot	- Tachycardia - Hypertension - Reports of syncope, MI, CVA - Sunburn	- No studies to support use - FDA concerned about ephedra-like effects



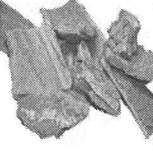
<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Black Cohosh 	<ul style="list-style-type: none"> - Black snakeroot - Macrotys - Bugbane - Bugwort - Rattleroot - Rattleweed 	<ul style="list-style-type: none"> - Can be used to make teas, pills, or tinctures 	<ul style="list-style-type: none"> - Arthritis - Muscle pain - Symptoms of menopause - Premenstrual syndrome - Induce labor 	<ul style="list-style-type: none"> - Headaches - GI - Possible hepatitis - No drug interactions reported 	<ul style="list-style-type: none"> - Mixed data, but studies so far have looked at less than 6 months of use - NCCAM looking at studies regarding menopause treatment
Cat's Claw 	<ul style="list-style-type: none"> - Una de gato 	<ul style="list-style-type: none"> - Inner bark used to make liquids, capsules, teas, or skin preps 	<ul style="list-style-type: none"> - Herpes - HIV - Viral infections - Alzheimer's - Cancer - Arthritis - Contraceptive/abort - Support immune system 	<ul style="list-style-type: none"> - Headaches - Dizziness - Vomiting - Possible other side effects unknown 	<ul style="list-style-type: none"> - Small studies show possible benefit for arthritis - No large trials or definitive evidence to support uses
Chasteberry 	<ul style="list-style-type: none"> - Chaste-tree berry - Vitex - Monk's pepper 	<ul style="list-style-type: none"> - Prepared as capsules or tablets 	<ul style="list-style-type: none"> - Ease menstrual problems - Stimulate lactation - Symptoms of menopause - Infertility - Acne 	<ul style="list-style-type: none"> - GI - Acne - Dizziness - No serious side effects 	<ul style="list-style-type: none"> - Some small studies (not well designed) showed benefit for premenstrual symptoms, breast pain, infertility - No definitive evidence to support use
Chamomile 	<ul style="list-style-type: none"> - German chamomile 	<ul style="list-style-type: none"> - Flowers made into teas, liquids, capsules, tablets, ointment, or mouth rinse 	<ul style="list-style-type: none"> - Insomnia - Anxiety - GI (upset stomach, gas, diarrhea) - Skin rashes - Mouth ulcers 	<ul style="list-style-type: none"> - Skin rash - Throat swelling - Anaphylaxis - Dyspnea - Similar to ragweed allergy 	<ul style="list-style-type: none"> - Little evidence to support use - Small studies show some benefit for skin and mouth ulcers
Cranberry 	<ul style="list-style-type: none"> - American cranberry - Bog cranberry 	<ul style="list-style-type: none"> - Prepared as juices, teas, capsules, and tablets 	<ul style="list-style-type: none"> - Wounds - UTI - Diarrhea - Diabetes - GI - Liver disease - Prevent dental plaque 	<ul style="list-style-type: none"> - GI upset - Appears to be safe and well tolerated 	<ul style="list-style-type: none"> - Promise seen in small non-randomized studies for UTI prevention - No large studies for other uses
Dandelion 	<ul style="list-style-type: none"> - Lion's tooth - Blowball 	<ul style="list-style-type: none"> - Rich source of Vitamin A - Used in teas, capsules, or extracts - Flowers can be used to make wine 	<ul style="list-style-type: none"> - Liver disease - Kidney disease - Splenic disease - Diuretic - GI upset 	<ul style="list-style-type: none"> - Generally safe - Avoid in patients with gall bladder disease - Some plant allergies reported 	<ul style="list-style-type: none"> - No current evidence for any use
Echinacea 	<ul style="list-style-type: none"> - Purple coneflower - Coneflower - American coneflower 	<ul style="list-style-type: none"> - Used to make teas, juice, extracts, or ointments 	<ul style="list-style-type: none"> - URI, Flu - Stimulate immune system - Acne 	<ul style="list-style-type: none"> - Allergic reactions - GI 	<ul style="list-style-type: none"> - Mixed results on whether it treats URI^{30,31} - Studies do not appear to support that it prevents URI
Ephedra 	<ul style="list-style-type: none"> - Chinese ephedra - Ma huang 	<ul style="list-style-type: none"> - Ephedrine active ingredient - Made into capsules, tablets, extracts, tinctures, and teas 	<ul style="list-style-type: none"> - URI - Fever - Headaches - Asthma - Nasal congestion - Weight loss - Increased energy - Enhanced athletic performance 	<ul style="list-style-type: none"> - Cardiovascular - CVA - Sudden death - Nausea - Headache - HTN 	<ul style="list-style-type: none"> - Few studies to show effectiveness except for short term weight loss - Risks outweigh benefits - FDA banned sale of supplements containing ephedra in 2004

<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
European Elder 	<ul style="list-style-type: none"> - Black elder - Elder - Elder flower sambucus 	<ul style="list-style-type: none"> - Made into teas, extracts, and capsules 	<ul style="list-style-type: none"> - Pain - Swelling - Infections - Cough - Skin rashes - Constipation 	<ul style="list-style-type: none"> - Nausea - Vomiting - Diarrhea - Polyuria 	<ul style="list-style-type: none"> - Not enough evidence to support use - Some small studies show benefit in sinus infections
Evening Primrose Oil 	<ul style="list-style-type: none"> - EPO 	<ul style="list-style-type: none"> - Gamma linolenic acid key ingredient - Oil made into capsules 	<ul style="list-style-type: none"> - Eczema - Rheumatoid arthritis - Breast pain - Menopausal symptoms - Premenstrual syndrome - Cancer - Diabetes 	<ul style="list-style-type: none"> - GI upset - Headache 	<ul style="list-style-type: none"> - Mixed studies showing some benefit for RA and breast pain, but studies small and not well designed - No substantial evidence to support use
Fenugreek 	<ul style="list-style-type: none"> - Fenugreek seed 	<ul style="list-style-type: none"> - Dried seeds ground up and taken by mouth or applied as paste to skin 	<ul style="list-style-type: none"> - Menopausal symptoms - GI problems - Inducing childbirth - Diabetes - Stimulate lactation - Skin rash 	<ul style="list-style-type: none"> - GI - Skin irritation 	<ul style="list-style-type: none"> - Few small studies show possible lowering of glucose - No major evidence to support use
Feverfew 	<ul style="list-style-type: none"> - Bachelor's buttons - Featherfew 	<ul style="list-style-type: none"> - Dried leaves used for capsules, tablets, and extracts 	<ul style="list-style-type: none"> - Migraines - Rheumatoid arthritis - Psoriasis - Allergies - Asthma - Tinnitus - Nausea/vomiting 	<ul style="list-style-type: none"> - Canker sores - GI - Headaches - Allergy 	<ul style="list-style-type: none"> - Mixed results for migraine treatment - Minimal effect towards RA - Evidence limited for use
Flaxseed/ Flaxseed Oil 	<ul style="list-style-type: none"> - Linseed 	<ul style="list-style-type: none"> - Available whole, powder, liquid, capsules 	<ul style="list-style-type: none"> - Laxative - Menopausal symptoms - Arthritis - Elevated cholesterol 	<ul style="list-style-type: none"> - May have drug interactions by limiting absorption - Otherwise few side effects 	<ul style="list-style-type: none"> - Effective laxative - Mixed results for cholesterol and menopausal symptoms
Garlic 		<ul style="list-style-type: none"> - Eaten raw or cooked - Used in tablets and capsules 	<ul style="list-style-type: none"> - High cholesterol - Heart disease - HTN - Cancer prevention 	<ul style="list-style-type: none"> - GI - Can thin blood similar to aspirin - Interacts with some HIV meds 	<ul style="list-style-type: none"> - Some evidence to support lowering of cholesterol³², but studies short-term - Mixed evidence on HTN, CAD, CVA, CA
Ginger 		<ul style="list-style-type: none"> - Can be taken as dried root, tablets, capsules, liquid, and teas 	<ul style="list-style-type: none"> - GI complaints - Rheumatoid arthritis - Osteoarthritis - Joint and muscle pain 	<ul style="list-style-type: none"> - GI - Fairly well tolerated 	<ul style="list-style-type: none"> - Some small studies support treatment of nausea - Mixed studies for other uses

<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Ginkgo 	<ul style="list-style-type: none"> - Ginkgo biloba - Fossil tree - Maidenhair tree - Japanese silver apricot - Baiguo - Bai guo ye - Kew tree - Yinhsing 	<ul style="list-style-type: none"> - Sold as tablets, capsules, or teas 	<ul style="list-style-type: none"> - Asthma - Bronchitis - Fatigue - Tinnitus - Memory loss - Claudication - Sexual dysfunction - MS 	<ul style="list-style-type: none"> - Headache - GI - Allergic reactions - Uncooked seeds may cause seizures due to gingotoxin 	<ul style="list-style-type: none"> - Some promise seen for memory loss/ dementia^{33,34} - Studies ongoing to look at other uses, but currently no definitive evidence to support other uses
Ginseng 	<ul style="list-style-type: none"> - Asian ginseng - Chinese ginseng - Korean ginseng - Asiatic ginseng 	<ul style="list-style-type: none"> - Ginsenosides are active chemical - Sold as tablets, capsules, teas, creams 	<ul style="list-style-type: none"> - Improve mental and physical performance - ED - Hepatitis C - Menopausal symptoms - Diabetes - HTN 	<ul style="list-style-type: none"> - Headaches - Insomnia - Allergic reactions - Possible hypoglycemia in conjunction with DM meds 	<ul style="list-style-type: none"> - Some small flawed studies support possible use for diabetes - Evidence otherwise equivocal for other uses
Goldenseal 	<ul style="list-style-type: none"> - Yellow root 	<ul style="list-style-type: none"> - Teas, tablets, capsules - Combined with Echinacea for URI treatment 	<ul style="list-style-type: none"> - URI - Diarrhea - Vaginitis - Cancer - Mouth ulcers 	<ul style="list-style-type: none"> - Nausea/vomiting - Fairly well tolerated 	<ul style="list-style-type: none"> - Few studies to support uses
Grape Seed Extract 		<ul style="list-style-type: none"> - Sold as capsules and tablets 	<ul style="list-style-type: none"> - Atherosclerosis - HTN - High cholesterol - Poor circulation - Macular degeneration - Cancer prevention - Wound healing 	<ul style="list-style-type: none"> - Headache - Dizziness - Nausea 	<ul style="list-style-type: none"> - Small studies show some benefit, but more ongoing - Studies ongoing to look at cancer treatment and prevention³⁵
Green Tea 	<ul style="list-style-type: none"> - Chinese tea - Japanese tea 	<ul style="list-style-type: none"> - Taken as beverage, capsules, skin products 	<ul style="list-style-type: none"> - Cancer treatment and prevention - Improve mental alertness - Weight loss - High cholesterol - Skin protection from sun 	<ul style="list-style-type: none"> - Caffeine side effects - Has small amounts of Vitamin K 	<ul style="list-style-type: none"> - Small studies showing mixed results for cancer treatment and prevention, mental improvement, and weight loss
Hawthorn 	<ul style="list-style-type: none"> - English Hawthorn - Harthorne - Haw - Hawthorne 	<ul style="list-style-type: none"> - Made as extracts, capsules, and tablets 	<ul style="list-style-type: none"> - Heart failure - Angina - CAD 	<ul style="list-style-type: none"> - GI - Headache - Possible drug interaction with Digoxin 	<ul style="list-style-type: none"> - Appears to have some effectiveness for mild CHF - Not enough evidence for other uses
Hoodia 	<ul style="list-style-type: none"> - Kalahari cactus - Xhoba 	<ul style="list-style-type: none"> - Made as capsules, powders, tablets - Often contain green tea or chromium 	<ul style="list-style-type: none"> - Appetite suppressant for weight loss 	<ul style="list-style-type: none"> - Unknown side effects - Some products sold as hoodia do not contain hoodia 	<ul style="list-style-type: none"> - No published data to support use

<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Horse chestnut 	<ul style="list-style-type: none"> - Buckeye - Spanish chestnut 	<ul style="list-style-type: none"> - Escin is active ingredient - Made as capsules and topical preparations 	<ul style="list-style-type: none"> - Chronic venous insufficiency - Hemorrhoids 	<ul style="list-style-type: none"> - Raw seeds may be poisonous due to esculin - GI - Itching 	<ul style="list-style-type: none"> - Small studies show some benefit for venous insufficiency - No evidence for other conditions
Kava 	<ul style="list-style-type: none"> - Kava kava - Awa - Kava pepper 	<ul style="list-style-type: none"> - Made as a beverage, capsule, tablets, and topical 	<ul style="list-style-type: none"> - Insomnia - Asthma - UTI - Anxiety - Menopausal symptoms - Anesthesia (topical) 	<ul style="list-style-type: none"> - Hepatitis and liver failure - Dystonia - Drowsiness - Drug interactions 	<ul style="list-style-type: none"> - FDA has issued warning for risk of liver damage - Sparse evidence to support treatment of anxiety - Not enough evidence to support other uses
Lavender 	<ul style="list-style-type: none"> - English Lavender - Garden Lavender 	<ul style="list-style-type: none"> - Used in aromatherapy - Oil can be applied on skin - Made as teas and extracts 	<ul style="list-style-type: none"> - Anxiety - Insomnia - Depression - Headache - GI - Hair loss 	<ul style="list-style-type: none"> - Oil may be poisonous if ingested - Skin irritation - Headache - Drowsiness 	<ul style="list-style-type: none"> - Little evidence to support uses - Some evidence for treatment for alopecia
Licorice root 	<ul style="list-style-type: none"> - Liquorice - Licorice - Gan zao - Sweet root 	<ul style="list-style-type: none"> - Made as dried and powdered forms, capsules, and tablets - Glycyrrhizin active ingredient 	<ul style="list-style-type: none"> - Peptic ulcers - Bronchitis - URI - Hepatitis 	<ul style="list-style-type: none"> - HTN - Salt retention - Hypokalemia - Should not be combined with diuretics 	<ul style="list-style-type: none"> - Not enough evidence to support use for hepatitis or ulcers, although some of the studies did show some benefit⁷²⁻⁷⁶
Milk Thistle 	<ul style="list-style-type: none"> - Mary thistle - Holy thistle - Silymarin 	<ul style="list-style-type: none"> - Silymarin an active ingredient - Made as capsules, extracts, and teas 	<ul style="list-style-type: none"> - Cirrhosis - Hepatitis C - Gallbladder disease - High cholesterol - Reduces insulin resistance - Slows cancer growth 	<ul style="list-style-type: none"> - Generally few side effects - GI - Allergic reactions 	<ul style="list-style-type: none"> - Small mixed studies show possible benefit in liver disease⁷¹ - Current studies ongoing to look at further claims of drug
Mistletoe 	<ul style="list-style-type: none"> - European mistletoe 	<ul style="list-style-type: none"> - Made as extracts - Given as IV in Europe 	<ul style="list-style-type: none"> - Seizures - Headache - Cancer 	<ul style="list-style-type: none"> - Raw herb may be poisonous - Itching - Fever - Allergic reactions 	<ul style="list-style-type: none"> - Lab studies show some promise of herb against cancer - Many small studies in Europe showing mixed results - Ongoing studies in US
Noni 	<ul style="list-style-type: none"> - Morinda - Indian mulberry - Hog apple - Canary wood 	<ul style="list-style-type: none"> - Made as a topical preparation, fruit juices, capsules, tablets, and teas 	<ul style="list-style-type: none"> - Joint pain - Skin rashes - CAD - Diabetes - Cancer 	<ul style="list-style-type: none"> - Hyperkalemia³⁶ - Liver damage 	<ul style="list-style-type: none"> - Lab research shows some promise as antioxidant - Few studies for other uses with ongoing trials - FDA would like more regulation

<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Peppermint Oil 		<ul style="list-style-type: none"> - Made as capsules, liquids, topical oils 	<ul style="list-style-type: none"> - Nausea - Headaches - Muscle and nerve pain - IBS 	<ul style="list-style-type: none"> - Allergic reactions - GERD 	<ul style="list-style-type: none"> - Some small studies to support use in IBS - Little evidence to support other uses
Red Clover 	<ul style="list-style-type: none"> - Cow clover - Meadow clover - Wild clover 	<ul style="list-style-type: none"> - Made as tablets, capsules, teas, liquids 	<ul style="list-style-type: none"> - Whooping cough/ URI - Menopausal symptoms - Osteoporosis - Prostate enlargement 	<ul style="list-style-type: none"> - No serious side effects noted 	<ul style="list-style-type: none"> - Very little effect on menopausal symptoms^{37, 38} - No strong evidence to support other claims
Saw Palmetto 	<ul style="list-style-type: none"> - American dwarf palm tree - Cabbage palm 	<ul style="list-style-type: none"> - Fruit eaten as dried or berries - Made into liquids, capsules, and teas 	<ul style="list-style-type: none"> - BPH - Chronic pelvic pain - Decreased sex drive - Hair loss - Bladder disorders 	<ul style="list-style-type: none"> - GI - Breast tenderness - Decreased libido 	<ul style="list-style-type: none"> - Large study found no effect on BPH symptoms³⁹ - Not enough evidence to support other claims
Soy 		<ul style="list-style-type: none"> - Made into capsules, tablets - Contain isoflavones, soy protein, or both - Can also be made into tofu, milk, and many other foods 	<ul style="list-style-type: none"> - High cholesterol - Menopausal symptoms - HTN - Breast CA - Prostate CA 	<ul style="list-style-type: none"> - GI - Allergic reactions - Unknown long-term effects 	<ul style="list-style-type: none"> - May lower LDL⁴⁰ - May reduce symptoms of menopause⁴¹ - Not enough evidence to support other uses
St. John's Wort 	<ul style="list-style-type: none"> - Hypericum - Klamath weed - Goat weed 	<ul style="list-style-type: none"> - Flowering tops made into teas and tablets 	<ul style="list-style-type: none"> - Depression/ Anxiety - Nerve pain - Sedative - Malaria - Balm for wounds - Insomnia 	<ul style="list-style-type: none"> - Sensitivity to sunlight - GI - Headache - Sexual dysfunction - Drug interactions 	<ul style="list-style-type: none"> - Large study showed that herb was no more effective than placebo for major depression⁴²
Thunder god vine 	<ul style="list-style-type: none"> - Lei gong teng 	<ul style="list-style-type: none"> - Root made into liquid extract 	<ul style="list-style-type: none"> - Menorrhagia - Rheumatoid arthritis - Multiple sclerosis - SLE 	<ul style="list-style-type: none"> - Plant eaten raw may be poisonous and can cause death - GI - Hair loss - Headache - Skin rash - Decrease bone density - Decreases sperm count 	<ul style="list-style-type: none"> - Some small studies indicating some benefit for RA⁴³⁻⁴⁵ - Lab study showed some promise against cancer - Not enough evidence to support other claims⁴⁶

<u>Treatment or therapy</u>	<u>Common names</u>	<u>Active Ingredient/ Forms</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Turmeric 	<ul style="list-style-type: none"> - Turmeric root - Indian saffron 	<ul style="list-style-type: none"> - Made into powder, capsules, teas, or paste for skin 	<ul style="list-style-type: none"> - GERD - PUD - Gallstones - Reduce inflammation - Cancer prevention - Pain - Eczema 	<ul style="list-style-type: none"> - Fairly safe - May worsen gallstones 	<ul style="list-style-type: none"> - Little evidence to support any uses
Valerian 	<ul style="list-style-type: none"> - All heal - Garden heliotrope 	<ul style="list-style-type: none"> - Made into capsules, tablets, and extracts 	<ul style="list-style-type: none"> - Anxiety - Insomnia - Headaches - Depression 	<ul style="list-style-type: none"> - Fairly safe with no long-term safety data - GI 	<ul style="list-style-type: none"> - Not enough evidence to support uses
Yohimbe 	<ul style="list-style-type: none"> - Yohimbe bark 	<ul style="list-style-type: none"> - Made into teas, capsules, and tablets 	<ul style="list-style-type: none"> - ED - Sexual dysfunction 	<ul style="list-style-type: none"> - HTN - Tachycardia - Headache - Drug interactions 	<ul style="list-style-type: none"> - Studies have been done on Yohimbine, but not the Yohimbe bark - No evidence to support claims

Appendix 3- Selected Dietary Supplements by Disease²⁹

Refer to Appendix 1 for further details about each therapy

<u>Disease/ Condition</u>	<u>CAM treatment</u>	<u>Research/Recommendations</u>
Alopecia Areata	<ul style="list-style-type: none"> - Evening primrose oil - Zinc - Vitamins - Chinese herbs 	<ul style="list-style-type: none"> - No significant studies to recommend these therapies
Cancer	<ul style="list-style-type: none"> - Antioxidants - Cartilage - Coenzyme Q₁₀ - Essiac - Garlic - Gerson - Milk Thistle - Vitamin supplements 	<ul style="list-style-type: none"> - Conflicting evidence about benefit as studies were small
Cardiovascular disease	<ul style="list-style-type: none"> - Garlic - Vitamin E 	<ul style="list-style-type: none"> - Some evidence to support garlic lowering cholesterol³², but studies short-term - No significant evidence for lowering CAD
Depression	<ul style="list-style-type: none"> - SAME - St. John's Wort 	<ul style="list-style-type: none"> - SAME showed little benefit versus placebo - St. John's Wort not more effective than placebo in one study⁴²
Diabetes	<ul style="list-style-type: none"> - Acupuncture for neuropathy - Chromium - Ginseng - Magnesium 	<ul style="list-style-type: none"> - Mixed results for chromium - Ongoing studies for others

Fibromyalgia	<ul style="list-style-type: none"> - SAME - Acupuncture - Chiropractic care - Hypnosis - Massage therapy - Tai chi 	<ul style="list-style-type: none"> - Some evidence for benefit in small studies for SAME and acupuncture - Insufficient evidence for others
Hepatitis C	<ul style="list-style-type: none"> - Milk thistle - Licorice root - Ginseng - Thymus extract - Schisandra - Colloidal silver 	<ul style="list-style-type: none"> - 2002 systematic review of milk thistle found no major benefit for treatment of liver disease⁷¹ - Mixed results for licorice with some benefit possible⁷²⁻⁷⁶ - No convincing evidence for others
Menopause	<ul style="list-style-type: none"> - Black cohosh - Dong quai - Ginseng - Kava - Red clover - Soy - DHEA 	<ul style="list-style-type: none"> - Evidence suggests limited benefit from black cohosh, dong quai, and ginseng - Kava can cause liver disease - Red clover may cause adverse effects on breast and uterus - Limited evidence on others
Osteoarthritis	<ul style="list-style-type: none"> - Glucosamine/chondroitin - SAME - Acupuncture 	<ul style="list-style-type: none"> - GAIT study found some benefit vs. placebo⁵² - Some benefit seen for SAME vs. placebo, but studies small - Some benefit seen for acupuncture
Rheumatoid arthritis	<ul style="list-style-type: none"> - Thunder god vine - Gamma-linolenic acid - Fish Oil - Valerian - Glucosamine/chondroitin - Ginger - Curcumin - Feverfew - Boswellia - Acupuncture, magnets 	<ul style="list-style-type: none"> - 2002 study at UTSW⁴⁴ showed some benefit for thunder god vine - Little evidence to support benefit for the other therapies

Appendix 4- Selected Vitamins and Dietary Supplements²⁹

<u>Treatment or therapy</u>	<u>Mechanism of action/ sources</u>	<u>Uses</u>	<u>Adverse Effects</u>	<u>Research/ Recommendations</u>
Antioxidants <ul style="list-style-type: none"> - Vitamin A - Vitamin C - Vitamin E - Betacarotene - Lycopene 	<ul style="list-style-type: none"> - Stabilize free radicals to prevent cell damage - Found in many fruits and vegetables - Sold as tablets 	<ul style="list-style-type: none"> - Cancer prevention - Cardiovascular disease 	<ul style="list-style-type: none"> - No major side effects 	Five large studies showed: <ul style="list-style-type: none"> - Vitamin E & betacarotene reduced risk of gastric CA⁴⁷ - Betacarotene increased risk of lung cancer and had no effect on other cancers⁴⁸⁻⁵¹ - Ongoing studies to look at this further
Chondroitin/ Glucosamine	<ul style="list-style-type: none"> - Glucosamine helps increase production of cartilage - Chondroitin helps retain water in cartilage - Sold as tablets 	<ul style="list-style-type: none"> - Osteoarthritis 	<ul style="list-style-type: none"> - Very few side effects, mainly GI 	<ul style="list-style-type: none"> - GAIT study found significant improvement in pain vs. placebo⁵² - Ongoing trials to look at this further
Coenzyme Q₁₀ <ul style="list-style-type: none"> - Q₁₀ - Vitamin Q₁₀ - Ubiquinone - Ubidecarenone 	<ul style="list-style-type: none"> - Used to allow cell stabilization and antioxidant - Found in high amounts in heart, liver, kidney, and pancreas - Made as tablets and also IV 	<ul style="list-style-type: none"> - Cancer - Supplementation in patients on statins (lower Q₁₀ concentrations) - Possible treatment for Parkinson's⁵⁵ 	<ul style="list-style-type: none"> - No serious side effects - GI - Can interact with some diabetes drugs and coumadin 	<ul style="list-style-type: none"> - Studies mixed but show some promise for cancer treatment with more ongoing trials^{53,54}

S-adenosyl-L-methionine (SAME)		<ul style="list-style-type: none"> - Depression - Osteoarthritis - Intrahepatic cholestasis from liver disease - Cholestasis of pregnancy 		<ul style="list-style-type: none"> - Mixed results for treatment of depression and cholestasis⁵⁶ - Some improvement seen in osteoarthritis when compared to placebo⁵⁶
Vitamin A	<ul style="list-style-type: none"> - Found in multiple sources of foods - Recommended daily intake of 2000-3000 IU/day in adults 	<ul style="list-style-type: none"> - Cancer treatment - Improve bone growth - Improve immune system 	<ul style="list-style-type: none"> - High amounts can lead to: <ul style="list-style-type: none"> - birth defects - liver disease - decreased bone density - CNS disease 	<ul style="list-style-type: none"> - Mixed results for cancer⁴⁷ - Increased Vitamin A actually led to increased fractures^{57,58}
Zinc	<ul style="list-style-type: none"> - Recommended daily intake of 8-11 mg in adults 	<ul style="list-style-type: none"> - Improve immune system - Shorten URI symptoms - Heal skin wounds faster 	<ul style="list-style-type: none"> - Excessive intake can cause: <ul style="list-style-type: none"> - Nausea, vomiting 	<ul style="list-style-type: none"> - Data does not show increased time to wound healing in normal individuals⁵⁹ - Studies are mixed regarding URI symptoms^{60,61}

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