Complementary and alternative approaches to women’s health

Continuing Education Module

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Goal:
To briefly review the physiology of menopause, the use of conventional hormone replacement therapy, and to examine several complementary and alternative approaches to managing menopausal symptoms.

Objectives:
Following the successful completion of this module, the participant will be able to:

- Describe the normal physiological changes that occur during menopause;
- List menopausal signs and symptoms;
- Compare the advantages and disadvantages of available conventional treatments for managing menopausal symptoms;
- Describe complementary and alternative approaches for managing menopausal symptoms and their purported mechanisms of action;
- Describe complementary and alternative approaches for managing urinary tract infections and their purported mechanisms of action;
- Describe complementary and alternative approaches for managing water retention;
- Identify the major advantages and disadvantages of complementary and alternative medicine for treating and managing menopause.

1. Introduction

Getting check-ups is one of the many things women can do to help stay healthy and prevent disease and disability. Regular health examinations and tests can help find problems before they start; they also can help find problems early, when chances for treatment and cure are better. By getting the right health services, screenings, and treatments, women are taking steps that help their chances for living a longer, healthier life.

A woman’s age, health and family history, lifestyle choices (i.e. what she eats, how active she is, whether she smokes), and other important factors impact what and how often she needs healthcare.

Women will experience PMS, some more severe than others; bladder/vaginal infections and ultimately menopause. Complementary and alternative products should be considered as a treatment option over and above the traditional medical interventions.

2. Menopause

Menopause is not a disease, rather a normal physiological stage of a woman’s life that typically occurs when she is in her late 40s to mid 50s. Sometimes called the ‘change of life’, menopause results as the ovaries gradually lose the ability to produce hormones in the necessary quantities for regular cyclic menstruation and/or the pool of ovarian follicles near total depletion. In each normal menstrual cycle between menarche (first menstrual period) and menopause, estrogen triggers the release of two or three eggs to the fallopian tubes (follicular phase) for potential fertilization. If the egg is not fertilized, and therefore not implanted into the uterine wall, the predominance of progesterone in the second half of the cycle (luteal phase) leads to menstruation - the sloughing off of cells lining the uterus. Women typically menstruate monthly until they reach their mid to late forties, at which time perimenopause begins. This phase, characterized by menstrual irregularity and other symptoms brought on by
increased estrogen to progesterone ratios, may last a few months or a few years prior to complete menopause. Menopause, also known as the climacteric, is thus defined as the time following one year of complete cessation of menstrual bleeding.

2.1 Menopausal changes

Numerous signs and symptoms characterize menopause. Some are classified as overt, others silent. Overt signs include hot flashes, night sweats, insomnia, vaginal dryness, and sexual dysfunction. Fatigue, muscle aches, and decreased energy are also common. Some women experience all of these symptoms; others may experience only one or two. Some overt signs can be troublesome, but they often decrease in intensity over time. However, the silent consequences of menopause continue unabated and exact a significant toll on women's long-term health, including an increase in cardiovascular disease risk and osteoporosis-related fractures.

Of the overt symptoms, hot flashes are probably the most common complaint of perimenopausal and menopausal women. Up to 75% of menopausal women will experience the sudden feelings of warmth with visible face, neck, and chest flushing, followed by profuse sweating. Hot flashes are believed by many to be the result of a temporary disruption of normal vasomotor control caused by the hormonal changes characteristic of menopause, but there is controversy regarding the underlying mechanisms responsible for this troublesome symptom.

In early studies using sensitive temperature recording devices, investigators were able to demonstrate body-surface temperature increases as great as 6°C in the fingers and toes during a hot-flash episode. In more recent studies using tiny swallowed thermometer probes, researchers have observed elevations in core temperature during these episodes, although the increases aren't as great. Although estrogen therapy as part of hormone replacement therapy (estrogen and progestin; HRT) is generally effective against hot flashes, in addition to its demonstrated beneficial effects on the cardiovascular and skeletal systems, few women comply with estrogen therapy. According to one estimate, only 3-13% of patients adhere to estrogen therapy.

Perimenopausal and menopausal women also often experience vaginal dryness, which can cause painful intercourse. This can lead to decreased interest in sexual activity, thus disrupting normal sexual lifestyles. Some women also experience vaginismus, painful vaginal spasms, which can create physical and psychological barriers to sexual activity. Generally, hormone replacement therapy, especially estrogen replacement therapy (ERT), effectively alleviates vaginal dryness. HRT with progestins may be less effective for this condition. Alternatively, using water-based lubricants prior to intercourse may be effective for women who are not willing to consider or adhere to HRT. Vaginal dryness often disappears as menopause progresses.

Another common problem associated with menopause is poor sleep quality caused by night sweats and other vasomotor and psychological dysregulation. Poor sleep often leads to a poor quality of life. Many women's welfare suffers because of lost productivity at work; daytime fatigue; and psychological consequences, such as depression and mood swings.

Although these symptoms are usually not life threatening, they can be bothersome and lead to an extremely compromised quality of life. Emotional despair, marital and family stresses, and declining overall health as a result of aging can mean tumultuous times for menopausal women.

2.2 Cardiovascular health

The risk of death from cardiovascular disease is much lower in premenopausal women compared with age-matched men, but following menopause this advantage is lost. Most researchers believe that menopausal women's hypoestrogenic state accounts for this silent consequence. The beneficial effects of estrogen on the cardiovascular system are well established and include reduced total cholesterol, especially the highly atherogenic low-density lipoproteins (LDL), and increased concentrations of the healthy high-density lipoproteins (HDL). Estrogen also increases vascular stretching and vasodilation (caused by calcium channel blockade and enhanced nitric oxide release), and decreases cellular adhesion molecules, renin, fibrinogen, and plasminogen activator inhibitor. Together, these estrogen-mediated changes support healthy cardiovascular function.
Postmenopausal women can significantly reduce their risk of cardiovascular disease by using HRT/ERT. Younger menopausal women using HRT decreased their incidence of death from cardiovascular disease by between 35% and 50% compared with those not using estrogen. In this study, both ERT and HRT were equally cardioprotective. However, in older women, estrogen's beneficial effects on mortality were not realized despite a 10% reduction in LDL levels.

Additional studies are needed to examine the cardiovascular effects of ERT and HRT in older women, especially differentiating those with prior cardiovascular disease histories from those without. Finally, with newer dosage forms of ERT becoming available (e.g., transdermal), additional studies are currently underway that may uncover important differences between HRT and ERT on postmenopausal cardiovascular health.

2.3 Bone health

Osteoporosis is characterized by a decrease in bone mass with decreased density and enlargement of bone spaces producing porosity and fragility. This condition is a major cause of bone fractures in aging individuals and contributes significantly to morbidity and mortality. As many as 20% of older patients who experience osteoporotic-induced hip fractures will die during the following 12-month period as they become significantly less mobile and more sensitive to opportunistic infections and comorbidities. Many who survive will become permanently disabled. Bone health is significantly compromised during menopause when estrogen concentrations dramatically decrease. Estrogens normally help prevent bone resorption or loss. Estrogens do not normally enhance bone formation; rather, they prevent bone loss. Thus, it is important to promote healthy bone function during growth periods (i.e., during the teenage and young adult years).

A number of factors can influence bone function status. Factors that generally increase bone formation include vitamin D, exposure to light, dietary and supplemental calcium and magnesium, and weight-bearing exercise. On the other hand, estrogen deficiency, pregnancy, nursing, and physical inactivity contribute to bone loss. While most osteoporosis treatments are capable of slowing or stopping bone loss, after menopause few agents are capable of enhancing bone formation. HRT and ERT both reliably improve bone status.

Osteoporosis prevention and treatment includes a healthy diet and exercise, and may involve pharmacological agents. For prevention and treatment, healthcare providers often prescribe estrogen replacement therapy, bisphosphonates (alendronate or risedronate), and selective estrogen receptor modulators (SERMs) (raloxifene). Many additional SERMs are expected to be available soon to treat or prevent osteoporosis.

Estrogens may have other beneficial effects. Results of animal studies show that estrogens may have neuroprotective or memory-enhancing effects, a result of their ability to enhance choline acetyltransferase activity and increase the density of dendritic spines in the CA1 region of the hippocampus; however, studies in humans have been less convincing.

Some researchers have suggested that estrogen use may decrease the incidence and possibly severity of Alzheimer’s disease. On the other hand, there have been no reliable studies to date that demonstrate a negative influence of estrogen use on cognitive function in postmenopausal women. The effectiveness of HRT and ERT for memory and cognition enhancement or neuroprotection in postmenopausal women remains an unanswered question.

2.4 Traditional treatment options

Numerous factors including cultural and socioeconomic ones, influence women’s decisions to seek healthcare support during menopause. For some women, menopause may involve no pharmacological interventions at all. For those who choose pharmacotherapy, traditional menopause treatments have involved HRT/ERT. In the early 1960s and 1970s, estrogen was used to manage menopause’s overt and silent signs and symptoms. In the 1980s, researchers found that unopposed estrogen therapy caused endometrial hyperplasia and could increase the incidence of endometrial carcinoma. Additionally, estrogens used alone may cause a resumption of menstrual bleeding. Soon, products were developed that contained both estrogen and progestins. The progestins (e.g., progesterone) may act in the endometrium to decrease estrogen receptors, convert the cells into more of a
secretory phase than a proliferative phase, and possibly increase the conversion of the potent estrogen estradiol into estrone.

Estrone has a reduced capacity to stimulate endometrial proliferation. For women who have not undergone hysterectomy (removal of the uterus) with oophorectomy (removal of the ovaries), estrogens can be used alone for the beneficial cardiovascular and bone formation effects if the progestins prove intolerable. In women with combined hysterectomies and oophorectomies (surgical menopause), using estrogens alone is safe because there are no endometrial carcinoma concerns. Some researchers however believe there is an increased breast cancer risk associated with long-term HRT/ERT use. The patient and healthcare practitioner will have to weigh the cardiovascular, bone, and overall well-being benefits of ERT or HRT and the risks.

Women have access to many traditional HRT approaches. One option is cyclic and provides estrogen for 25 days then progestins, especially medroxyprogesterone acetate, for 10 to 13 days. Many treatment schedules will include four or five days without hormones, resulting in the sloughing off of endometrial cells and bleeding. Some healthcare providers prefer to avoid the bleeding phase and prescribe preparations that provide continuous hormone therapy for the entire month. While many preparations are administered orally, the transdermal route is sometimes available and may increase compliance. However, transdermally administered HRT is not as beneficial as oral preparations with regard to its effects on plasma lipoprotein status.

Although many effects of HRT are beneficial for the overt and silent consequences of menopause, estrogen use also has a dark side. Subjective complaints of estrogen therapy include breakthrough bleeding, depression, headache, fluid retention, and nausea. In addition to the concerns regarding unopposed estrogen actions on the endometrium, estrogen may increase health risks in women with a history of blood clots, severe varicose veins, obesity, gall bladder and pancreatic disease, and among those who smoke. Women who have a family history of breast cancer constitute a special group where the benefit to risk ratio of estrogen use needs to be carefully weighed.

2.4.1 Link between decline in breast cancer and HRT use

An extended analysis of cancer rates reinforces a strong association between use of HRT and increased breast cancer incidence. Plummetsing use of HRT in the mid-2002, after results of the Women’s Health Initiative (WHI) study were announced, correlated with a steep decline in new breast cancer diagnoses that started shortly thereafter and continued through 2003. Incidence leveled in 2004 and maintained the same low level of incidence, the lowest rate seen since 1987.7b

The decline occurred primarily in women age 50-69 and was predominantly seen in estrogen-receptor-positive cancer. Such cancers declined 14.7% in this time period, compared to a non-significant decline of 1.7% in estrogen-receptor-negative tumours.

The results of WHI study, and the concomitant media-related impact, led to more than 50% of women stopping their hormone replacement therapy (HRT) and searching for alternatives to HRT.

In summary, when women with menopausal symptoms use HRT, it effectively controls symptoms 75-90% of the time. However, recent surveys indicate that while HRT may dramatically reduce symptoms, fewer than one in four menopausal women for whom HRT therapy is appropriate actually follow this treatment regimen adequately.

2.5 CAM and menopause

There are many reasons why women in menopause look beyond mainstream treatment options. Many women fear the adverse effects of hormone and estrogen replacement therapy. Despite the evidence supporting HRT’s safety in many women (although not all), few women adhere to conventional therapy.

There are many complementary and alternative products available to menopausal women today. The most popular are classified as nutritional supplements and include isoflavones, vitamins, minerals, and herbs.
According to Kass-Annese, there are four major categories of alternative therapies for menopausal women to consider:

- Diet and nutrition, which includes dietary modifications with an emphasis on isoflavones, vitamins and minerals;
- Psychological and spiritual approaches, such as meditation;
- Exercise; and
- Other alternative approaches such as homeopathy, Ayurvedic medicine, and naturopathy.

Many women use supplements to manage their symptoms with hardly any side effects.

2.5.1 Plant-based therapy

2.5.1.1 Isoflavone phytoestrogens

Isoflavone phytoestrogens (i.e., estrogen-like or estrogen-mimicking molecules from plants) have received the most attention for alleviating many menopausal symptoms. Various foods, especially those derived from soy and other legumes, contain these compounds that act as weak estrogen receptor agonists. A number of nutritional supplements also contain isoflavones.

The individual isoflavones found in soy, chick peas (garbanzo beans), and other legumes as well as in bluegrass, clover, and toothed medic are genistein, daidzein, and glycitein. These compounds are derived from their corresponding glycosides: genistin, daidzin, and glycitin. Genistein and daidzein in particular have estrogenic activity that is approximately 1/1000 the activity of the standard estrogenic agonist, estradiol. After eating soy protein, blood concentrations of genistein are approximately 1000 times greater than estradiol levels.

In Japan and other countries where soy consumption is high, women experience fewer and less severe menopausal symptoms than women in cultures where soy consumption is minimal, such as the United States and Western Europe. Isoflavone use has resulted in fewer hot flashes by some reports; however, a number of studies have failed to demonstrate a reduction in hot flashes. These disparate results may be caused in part by study design differences (duration, supplement used, and end-points measured, for example). New studies are underway to determine whether phytoestrogens effectively relieve menopause symptoms.

Phytoestrogens also have antioxidant activity; inhibit tyrosine kinase, an important intracellular enzyme involved in many essential cell functions; and inhibit the growth of many different types of tumor cells via their ability to inhibit angiogenesis. It is well known that breast and prostate cancer risk varies substantially throughout the world, a fact some have attributed to differences in dietary phytoestrogen intakes.

Genistein supports healthy bones by stimulating osteoblast number and function, while decreasing osteoclast activity. As a result, bone resorption is minimized. In one six-month human trial, a 40-g daily dose of soy protein (containing 90mg of isoflavones) produced a more than 2% increase in spinal bone density and a favorable change in blood lipid profiles among postmenopausal women not receiving any hormone treatments. The same amount of soy protein with a lesser amount of isoflavones (56mg per day) had no effect on bone density, but did impart a favorable blood lipid-modifying effect more rapidly than the high-isoflavone soy diet. Additionally, phytoestrogen-enriched diets beneficially influence the LDL:HDL ratio, and thus may positively benefit cardiovascular health in menopausal women.

2.5.1.2 Pollen and pistil extracts

Elia and Mares (2008) examined the effectiveness of Sérélys (also known as Femal®), a food supplement containing vitamin E, a purified pollen extract and a mixture of cytoplasmic pollen and pistil extracts, on PMS and menopause. The product does not contain any phyto-estrogens and has an antioxidant (due to antioxidant enzymes) and a natural non-steroidal anti-inflammatory effect. Their study confirms the results observed in previous studies conducted on Femal by Winther and co-workers (2005) concerning the frequency and intensity
of hot flushes. In addition, a search for phytoestrogens in the active agents of the product also turned out negative, and a hormonal type action was therefore ruled out.

On the basis of this study and previous ones\textsuperscript{16,17} the authors concludes that Femal\textsuperscript{®} offers significant effectiveness on the most frequent problems related to menopause - hot flushes and sweats, bringing about a significant improvement in the quality of life of patients. Good tolerance of the product, the absence of phytoestrogens and its non-hormonal mechanism of action enable it to be safely suggested to women who suffer from hot flushes and menopausal sweats. The researchers noted an improvement in the frequency of hot flushes, episodes of sweating, irritability and tiredness, quality of sleep and quality of life. They also confirmed that there were no changes in FSH, estrogen, testosterone and SHBG, thus ruling out a hormonal type of action.\textsuperscript{14}

2.5.2 Magnesium

Most South Africans, and particularly women, have a suboptimal magnesium status. This mineral is an essential co-factor for more than 300 enzymes in the body that are involved in a number of crucial anabolic, catabolic, and cell respiratory functions. The RDA for magnesium in women older than 50 is 320mg, or approximately 5 mg/kg. However, the emphasis on calcium for bone health often occurs at the expense of magnesium. In fact, magnesium also plays an important role in preventing osteoporosis. As magnesium availability decreases, the parathyroid gland releases less parathyroid hormone, which decreases calcium absorption and retention in bone.\textsuperscript{18} Thus, healthy bones require adequate amounts of both minerals, in addition to phosphorus and fluoride. The optimal calcium: magnesium intake ratio should be approximately 2:1, or 1200mg calcium and 600mg magnesium. Additionally, researchers have found that magnesium has a cardioprotective effect because of its ability to decrease blood pressure, platelet-dependent thrombosis, and arrhythmias.\textsuperscript{19}

Various magnesium salts and chelates are available and because magnesium use has a large benefit to risk ratio, (in the absence of renal insufficiency large doses usually only cause a self-limiting laxative effect), healthcare providers should encourage routine use by most adults, especially perimenopausal and menopausal women.

2.5.3 Omega 3 and 6 essential fatty acids

The two fatty acids - linolenic (LA, 18:2(n-6)) and alpha-linolenic acid (ALA, 18:3(n-3)) are physiologically essential and complementary, but they compete as substrates for desaturases. Not only is the intake of ALA far too low, but also its conversion to longer fatty acids is reduced because it has to compete with the larger quantities of LA for the same enzyme.\textsuperscript{20} Indeed, polyunsaturated fatty acids are dramatically involved in human health and pathologies, the ratio omega-6/omega-3 being important.\textsuperscript{20} Interestingly, dietary omega-3 fatty acids content is largely below the recommended quantities.

ALA, docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA) are important for preventing ischemic cardiovascular disease in women of all ages. Omega-3 fatty acids can help to prevent the development of certain cancers, particularly those of the breast and colon, and possibly of the uterus and the skin, and are likely to reduce the risk of postpartum depression, manic-depressive psychosis, dementias, hypertension, toxemia, diabetes and, to a certain extent, age-related macular degeneration. Omega-3 fatty acids could play a positive role in the prevention of menstrual syndrome and postmenopausal hot flushes.\textsuperscript{20}

3. Menstrual cycle-related discomforts

Symptoms due to the menstrual cycle may wreak havoc in women’s lives but often respond to self-care approaches. Menstrual-related problems may or may not be self-treatable. Some problems such as endometrioses, must be referred to a specialist for a full medical evaluation. On the other hand, pharmacists and other healthcare professionals can provide assistance for the more common problems, e.g. premenstrual syndrome (PMS) and dysmenorrhoea. Some of the PMS symptoms can be managed by using nutritional herbal supplements as discussed above.

Water retention and cystitis, as experienced by many women, can also be managed by CAM products.
3.1 Water retention

Women of menopausal age often experience water retention due to fluctuations and imbalance in their hormone levels. Other contributing factors include thyroid problems, high blood pressure, kidney disease and seasonal changes.\(^{21}\)

Acute water retention conditions (e.g. water retention due to sitting or standing for long periods of time, or PMS) are experienced by the majority women almost on a daily basis. Edema is usually treated with regular diuretics.\(^{22}\) However, these can be habit-forming and the body may start relying on the diuretics to do the work.

Many women are opting for non-habit-forming natural remedies that contain herbs that can act as a diuretic, treat indigestion and stomach discomfort and assists with urinary tract infections such as:\(^{23}\)

**Uva Ursi** - has urinary antiseptic \((in\text{ }vitro)\) activity against Citrobacter, Enterobacter, Escherichia, Klebsiella, Proteus, Pseudomonas and Staphylococcus, astringent, diuretic, and anti-inflammatory effects in the genitourinary tract.\(^{24}\)

The herb neutralizes acidity in the urine, increasing urine flow, therefore reducing bloating and water retention. Uva Ursi contains allantoin which is well known for its soothing and tissue repairing properties. It contains chemicals, primarily hydroquinone and hydroquinone derivatives, that make it potentially useful for urinary conditions and is used to treat infections such as cystitis, urethriti and nephritis.\(^{24}\)

The hydroquinone derivative arbutin is the chief active compound in Uva Ursi. During urination it acts on the mucus membranes of the urinary tract to soothe irritation, reduce inflammation, and fight infection. Interestingly, arbutin taken alone is not as effective as the whole Uva Ursi plant in controlling urinary tract infections. That is because intestinal bacteria can break down arbutin, but they are less likely to do so in the presence of other Uva Ursi compounds.

The leaves contain arbutin, which acts against E. coli and increases urination. Uva ursi also fights bacteria and cleanses the urinary tract, promotes excretion, and deters water retention, supports the kidneys, and cools inflammatory reactions (Frohne, 1970 as cited by Pizzorno and Murray, 2000: 990).\(^{25}\)

The increased urine action of Uva Ursi is due to arbutin which is largely absorbed unchanged and is excreted by the kidneys. During its excretion, arbutin exercises an antiseptic effect on the urinary mucous membrane. It is therefore used in inflammatory diseases of the urinary tract, urethritis and cystitis.

**Dandelion leaf and dandelion root** – a diuretic. Contains quercetin, luteolin, p-hydroxyphenylactic acid, gemarcanolide acid, chlorogenic acid, chicoric acid, monocaffeiyltartaric acid, scopoletin, aesculetin, chichoriin, faradiol, caffeic acid, taracoside, taraxasterol and large amounts of the polysaccharide inulin. Dandelion is also high in potassium.

Sesquiterpenes lactones are responsible for diuretic effect and may contribute to dandelion’s mild anti-inflammatory activity. According to Balch (2004),\(^{26}\) dandelion is also used as a diuretic to help to relieve fluid retention in premenstrual syndrome (PMS) and counteract urine retention in bladder infection.

Recent studies suggest that dandelion root extract inhibits production of the inflammatory cytokines interleukin IL-6 and tumor necrosis factor (TNF) - alpha. Dandelion flower extract possesses bioactive photochemical with the ability to scavenge ROS (reactive oxygen species) and prevent DNA from ROS-induced damages.

**Juniper** - a diuretic. Consist of alpha-pipene (29.17%), beta-pipene (17.84%), sabinene (13.55%), limonene (5.52%) and micrene (0.33%). Juniper essential oil has bactericidal activities against gram-positive and gram-negative bacteria.\(^{27}\)

The diuretic action of juniper has been attributed to the terpinen-4-ol. Stanic and co-workers (1998) suggested that the diuretic effect is partly due to the essential oil and partly to hydrophilic constituents.\(^{28}\)
**Burdock** - can help eliminate excess fluids in the body and stimulate the elimination of toxic waste materials, which relieves liver disorder and improves digestion.\textsuperscript{26}\textsuperscript{,}28 Burdock root contains approximately 50% inulin, a fibre widely distributed in fruits, vegetables and plants.

Several studies have confirmed that burdock seeds, roots and leaves exhibit antioxidant activities, as well as an anti-inflammatory and an ability to inhibit the potent inflammation-causing chemical platelet activating factor.\textsuperscript{29,30}

**Parsley powder** - medicinal properties: stimulant, diuretic, carminative and anti-inflammatory. The diuretic effect of the herb is mediated through an increase in K+ retention in the lumen and is mediated through an inhibition of the Na+ - K+ pump that would lead to a reduction in Na+ and K+ re-absorption thus leading to an osmotic water flow in the lumen and ultimately diuresis.\textsuperscript{31}

**Golden Rod** - used to counter inflammation (by inhibiting elastase) and irritation caused by bacterial infections. The use of an herbal remedy such as goldenrod with a complex action spectrum (anti-inflammatory, antimicrobial, diuretic, antispasmodic and analgesic) is especially recommended for the treatment of infection and inflammation.\textsuperscript{32}

**Potassium, vitamin B6 and magnesium** - many diuretics raise renal output of these solutes. Replacing these essential electrolytes is thus important.

Potassium is an essential mineral needed to regulate water balance, levels of acidity and blood pressure. Potassium (K) depletion usually is due to excessive losses of K in the urine or stool.\textsuperscript{33}

Magnesium may also help to reduce other premenstrual symptoms, such as abdominal bloating and fluid retention, whereas vitamin B6 (pyridoxine) is thought to help in cases of mild fluid retention.\textsuperscript{34}

### 3.2 Urinary tract infections/cystitis

Urinary tract infection (UTI) refers to the presence of clinical signs and symptoms arising from the genitourinary tract plus the presence of one or more micro-organisms in the urine exceeding a threshold value for significance (ranges from 10^2-10^3 colony-forming units/mL).\textsuperscript{35} Cystitis is a chronic urinary bladder disorder characterized by thinning or ulceration of the bladder epithelial layers.

Cystitis occurs primarily in women and symptoms are exacerbated by stress, ovulatory hormones and certain foods.\textsuperscript{36}

#### 3.2.1 Treatment

To prevent the development of end-stage cystitis, aggressive and early detection, combined with a multi-modality therapy approach may help stop the progression of the disease over time.\textsuperscript{37}

Re-occurrence of UTI is common, causing frustration in the patient and the potential for developing antibiotic resistance.\textsuperscript{38} Recurrence requiring interventions are usually defined as two or more episodes over 6 months or three or more episodes over 1 year.\textsuperscript{35} Herbal medicines could be effective in the treatment of cystitis, by decreasing inflammation and healing the bladder tissues:

**Cranberry** - bacteriostatic, especially in the urinary tract; astringent.\textsuperscript{24}

Cranberry treatment is a safe, well tolerated supplement that does not have significant drug interactions.\textsuperscript{39} It is commonly used for the prevention and treatment of UTI.\textsuperscript{35,40}

Against specific bacteria, cranberry proanthocyanidins and flavonols inhibit the growth of *Streptococcus mutants*, whereas cranberry phenolic groups showed antibacterial activity against *Helicobacter pylori*. Some of the chemicals in cranberry keep the UTI-causing bacteria E. coli from sticking to the cells that line the urinary tract.
walls of the bladder where they colonize. One of the components is fructose which inhibits the mannose-sensitive type-1 fimbrial adhesion in yeast aggregation assay. The second inhibitor is a high molecular weight compound which act on the mannose-resistant P fimbriae or pili expressed by uropathogenic E. coli.

Cranberry also has antioxidant and anti-inflammatory activities, which includes the inhibition of cyclo-oxygenase. Cranberries contain salicylic acid which is similar to aspirin, assisting with pain management. Cranberry juice consumption is often recommended along with low-dose oral antibiotics for prophylaxis for recurrent UTI.

**Quercetin** - a bioflavonoid which is well tolerated and provides significant symptomatic improvement in most inflammatory diseases. It protects against various diseases such as osteoporosis, certain cancers, cardiovascular disease, and bladder infections. Quercetin has the ability to scavenge highly reactive species such as peroxynitrite leading to beneficial health effects.

**Bromelain** - is a complex mixture of proteinases typically derived from pineapple stem. It has anti-edematous, anti-inflammatory, antithrombotic and fibrinolytic activities. Beneficial therapeutic effects of bromelain have been suggested or proven in several human inflammatory diseases and animal models of inflammation, including arthritis and inflammatory bowel disease. It lowers kinogen and bradykinin serum and tissue levels and has an influence on prostaglandin synthesis, thus acting as an anti-inflammatory.

**Papain** - papain-like cysteine proteases have been divided into two subfamilies represented by mammalian enzyme cathepsin L and cathepsin B, respectively. Cathepsin B is a lysosomal cysteine protease, it functions in intracellular protein catabolism and in certain situations may also be involved in other processes, such as processing of antigens in the immune response, hormone activation and bone turnover. Cathepsin B is also involved in the pathology of chronic inflammatory diseases of airways and joints, cancer and pancreatitis.

**Buchu** - has several activities, including urinary antiseptic, anti-inflammatory, and anti-cystitic. Buchu leaf preparations have a long history of use in traditional herbal medicine as a urinary tract disinfectant and diuretic. Buchu contains both diposmin and hesperidin, which indicates it may have anti-inflammatory, hypolipidemic and vasoprotective action. Buchu leaves extract contains isomenthone and disphenol which is very useful in resolving the symptoms of cystitis and other urinary disorders.

**Hibiscus** - an aromatic herb with diuretic properties, also providing vitamin C (antioxidant). Additionally, it has antiseptic, antibacterial, demulcent, emollient, and anti-inflammatory properties. The anthocyanins contribute to the health-protecting effects.

4. **Conclusion**

When it comes to integrative, holistic healthcare, no single treatment or mélange of treatments and remedies will suit all sufferers, as each woman’s pathology and psychology is unique. Optimal healing can however be experienced when an individually formulated treatment plan, which takes into account each person’s distinctive situation, is mindfully implemented, in a collaborative patient-practitioner partnership. CAM products should be part of this treatment plan.
References

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