Urinary Tract

- Dysuria (Painful or difficult urination)
- Irritable bladder (organisms not found)
- Interstitial cystitis
- Infection
  - cystitis, nephritis
- Urolithiasis
- Incontinence
- BPH
- Erectile dysfunction
- Neoplasms

Arctostaphylos spp.
Urinary Tract Materia Medica

- diuretic—goldenrod (clinical trial), green tea, uva ursi*, dandelion herb, lovage root, birch leaf, corn silk, cleavers, parsley root, nettle herb, seed, scotch broom**
- antispasmodics—kava, crampbark, lobelia, Ca. poppy
- demulcents—marshmallow, aloe, slippery elm, fenugreek, barley
- anti-inflammatory—goldenrod, corn silk, saw palmetto, turmeric, corn silk
- allantoin—corn silk, comfrey root, aloe
- antimicrobials—cranberry, pipsissewa, berberine, garlic, juniper
- Resorative/protectant—milk thistle, cordyceps
- Lithotriptics—hydrangea, parsley root, knotweed, cleavers, gravel root

*contains arbutoside which is hydrolyzed by gut bacteria to hydroquinone→hydroquinone glucuronide (liver) →hydroquinone if urine is alkaline, which is antibiotic; RDBPC trial (n=57; 1 year follow-up; women receiving the uva ursi had 23% fewer follow up episodes of cystitis

**mild cardio-active glycosides; formerly used for dropsy; experienced herbal use only
Kidney Tonification Protocol

- Acupressure (KI 3, KI7 (for heat), 3-yin crossing)
- Early sleep (by 10:30)
- Holistic stress management
- No added sugar, low-glycemic index diet

Herbs
- KI yin tonics
  - gouji (cook with it)
  - ligustrum fruit (dried tea)
  - American ginseng (dried tea)
  - rehmannia (cooked or not)
Chronic Inflammation Protocol

• Causes
  – poor sleep quality, quantity, timing
  – use of high glycemic index foods, added sugar
  – chronic stress that is not released
  – chronic infections
  – use of stimulants
  – over-stimulantlying, heating foods (red meat)

• Remedies
  – good sleep quality, timing
  – sugar-free diet
  – release the stress (mindfulness, yoga, etc.)
  – Immunomodulators
  – Breathing, walking
  – Complex carbs, veggies, especially green, fruits, moderate protein, fat
Chronic Inflammation Tx

- KI Yin tonics
- Antiinflammatory pathway modulators
  - pineapple, green papaya
  - bioavailable turmeric
  - other spices
    - frankincense
    - high-flavonoid veggies, berries
    - willow bark extract
    - hops
    - berberine-containing herbs
## Most Potent Aquaretics

<table>
<thead>
<tr>
<th>Potency</th>
<th>Latin name (common name)</th>
<th>Part used</th>
<th>Family</th>
<th>Miscellaneous notes</th>
<th>Commission E approved for diuresis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong</td>
<td><em>Solidago spp</em> (goldenrod)</td>
<td>Herba</td>
<td>Asteraceae</td>
<td>Anti-inflammatory</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><em>Levisticum officinale</em> W Koch (lovage)</td>
<td>Radix</td>
<td>Apiaceae</td>
<td>Mild risk of photosensitivity</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><em>Betula spp</em> (birch)</td>
<td>Folium</td>
<td>Betulaceae</td>
<td>Antimicrobial, anti-inflammatory</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><em>Petroselinum crispum</em> (Mill) Nyman ex AW Hill (parsley)</td>
<td>Radix, fructus</td>
<td>Apiaceae</td>
<td>Antispasmodic, anti-inflammatory</td>
<td>Yes (root only)</td>
</tr>
<tr>
<td>Medium</td>
<td><em>Tartaricum officinale</em> Weber ex FH Wigg (dandelion)</td>
<td>Fructus</td>
<td>Apiaceae</td>
<td>Antispasmodic</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><em>Ononis campestris</em> Koch &amp; Ziz (restharrow)</td>
<td>Radix</td>
<td>Fabaceae</td>
<td>Aqueous extracts only</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><em>Urtica dioica</em> L (stinging nettle)</td>
<td>Folium</td>
<td>Urticaceae</td>
<td>Anti-inflammatory, radix for bph</td>
<td>Yes</td>
</tr>
<tr>
<td>Mild</td>
<td><em>Parietaria judaica</em> L (pellitory-of-the-wall)</td>
<td>Herba</td>
<td>Urticaceae</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><em>Galium aparine</em> L (cleavers)</td>
<td>Herba</td>
<td>Rubiaceae</td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td><em>Equisetum arvense</em> L (horsetail)</td>
<td>Herba</td>
<td>Equisetaceae</td>
<td>Commission E also approves topical use for wounds &amp; internal use for post-traumatic edema</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td><em>Chimaphila umbellata</em> (L) WPC Barton (pipsissewa)</td>
<td>Herba</td>
<td>Ericaceae</td>
<td>Demulcent, mild antimicrobial</td>
<td>No</td>
</tr>
</tbody>
</table>

Source: Yarnell, 2002
Featured Plant

*Equisetum telmateia*

- **Chemistry**
  - inorganic acids, salts, phenolic acids, flavonoids, alkaloids and volatile components; water-soluble silicic acid
- **Pharmacology**
  - diuretic, antiseptic, anodyne, cardiac, carminative, galactagogue, vulnerary, diaphoretic, neuroprotective, antiulcerogenic, anticancer, antimicrobial and antioxidative properties
- **Therapeutic**
  - ethanolic extract, but not aqueous extract has significant microbicidal effects against *E. coli*, strep and staph
  
  - Preparation: pour 1 cup boiling water over 2-4 grams of the dried herb and steep for 15 minutes, strain; drink 2-3 cups/day

Source: de Queiroz; Wichtl
Examples of Commercial Formulas

- **Herb Pharm**
  - goldenrod, corn silk, horsetail, uva-ursi, juniper berry

- **Herbalist & Alkemist**
  - cleavers, hydrangea root, uva-ursi, agrimony, corn silk, Oregon grape root

- **Dr. Christopher bladder formula**
  - bladder: parsley root, juniper berries, marshmallow root, white pond lily, gravel root, uva-ursi, lobelia, ginger root, black cohosh root
  - kidney: juniper berries, parsley root, marshmallow, goldenseal, uva ursi, lobelia, ginger

- **Herbs, etc. (Michael Moore)**
  - CranBladder: cranberry, uva-ursi, echinacea, nettle, buchu, horsetail, pipsissewa, yarrow, meadowsweet, licorice, stevia
Dysuria

All conditions associated with painful or difficult urination and/or a painful ache over the bladder area

- Painful or difficult urination
  - infection, inflammation, prostate hyperplasia, urolithiasis, cancer
  - also IC (autoimmune chronic inflammation) or OBS
- Common causes—cystitis, or urethritis due to STD (*Chlamydia*)
- Visible urethral or cervical discharge suggests an STD

Source: memrise.com
Dysuria—painful urination

- **Symptomatic treatment**
  - Demulcent, soothing herbs
    - Pipsissewa (*Chimaphila umbellata*)
    - Marshmallow root (*Althea officinalis*)
    - Plantain leaf (*Plantago major, P. lanceolata*)
    - Fenugreek, barley tea
  - Antiinflammatory
    - Cleavers (*Galium aparine*)
    - Corn Silk (*Zea mays*)
    - Pipsissewa (*Chimaphila umbellatum*)
  - Anodyne
    - kava, corydalis, willow bark extract (salicin)
  - Antispasmodic
    - California poppy, cramp bark, lobelia (<10 drops), wild yam

- **Symptomatic treatment**
  - Diuretic
    - goldenrod tops
    - uva ursi
    - birch leaf
    - green tea
    - equisetum tops

- **Treatment Plan**
  - blend herbs based on symptoms and TCM dx (at least 1 from each category; consider energetics of the patient-herb interaction)
  - Consider long-term constitutional plan and formula (tonics, or long-term reducing formulas for excess)
    - Kidney yin tonics slide
Dysuria
Tx in Traditional Thai Medicine

• Khon Kaen District
  – experience level on medicinal plant utilization of the residents, in the total of 11 villages, varied from 17 to a hundred percent
  – prevalence of dysuria was 18.7 percent, with the higher occurrence in adults than in children. Approximately 18.3 of these cases was dependent on medicinal plants for symptomatic treatment

• Most popular traditional treatments
  – *Ananas comosus* (pineapple), *Cyperus rotundus* (nut sedge), *Carica papaya* (papaya), *Imperata cylindrical* (cogon grass), *Averrhoa carambola* (star fruit)
  – papaya roots (secondarily, green skin) had stronger antiinflammatory effects than aspirin; pineapple had mild antiinflammatory effects
  – nut sedge and cogon grass had strong inhibitory effects against *e. coli*
  – strong diuretic effects noted with the tea of pineapple (roots and stem) and papaya (root, green skin)

Source: Sripanidkulchai et al., 2002
Cystitis (Bladder Infection)

- More common in women
- *E. coli* most associated
- Hygiene important

**Predisposing factors:**
- Damp heat lower Jiao (internal heat and damp pathogens)
- Sugar, stress
- Weak immune status
- Lax hygiene
- Disordered bowel flora
- Chlamydia

**Treatment Strategy**

- Soothing, demulcents
  - Plantain leaf, marshmallow root, slippery elm bark
- Diuretics
  - Goldenrod, Uva-ursi (alkalize), dandelion leaf, juniper berry, green tea, asparagus root
- Antiseptics
  - Pipsissewa, goldenrod, uva-ursi, cranberry, garlic tincture, usnea, berberine-containing herbs
- Antiinflammatories
  - Goldenrod, plantain leaf, nettle root
- Bladder tonics
  - Saw palmetto, nettle root, cordyceps
Interstitial Cystitis (IC)
Painful Bladder Syndrome

- no current cure; chronic autoimmune condition
  - with pain, inflammation
- requires a medical dx with imaging
- often mistaken for uncomplicated cystitis, but no or little infection present typically
- chronic inflammation causes sclerosis of the bladder wall, reduces capacity of bladder (with more frequent urination)
- mild to severe

**Treatment Strategy**
- Antiinflammatories, on-going
  - pineapple stem, papain, aloe, corn silk (allantoin)
- Antispasmodics
  - kava (too warm for some), cramp bark, Cal. poppy
- Diuretics
  - goldenrod, dandelion herb, birch leaf, corn silk
- Chronic systemic antiinflammatory protocol
- Kidney tonification protocol
Overactive Bladder Syndrome
(OBS or Irritable bladder)

- Problem with nerves and muscles of the bladder
- Frequent urination
- Nocturia
- More common in women

- Do differential diagnosis; usually Kidney deficiency, stagnation of Qi and blood
  sometimes liver hyperactivity syndrome, spleen Qi deficiency

- Calm liver
  - Gentian, dandelion root
- Anxiolytics
  - kava, California poppy, hops, passion flower, scullcap
- Demulcents
  - marshmallow, fenugreek, barley, plantain leaf
- Antispasmodics
  - wild yam, cramp bark, black haw
- Move Qi and blood
  - lovage root (chuan xiong), safflower, shu di huan (rehmannia, uncooked)
- Kidney tonics
  - American ginseng
  - nettle leaf and seed
Kidney stones treatments

• Risky diets
  – The formation of various types of kidney stones is strongly influenced by urinary pH
  – An alkaline pH favors the crystallization of calcium- and phosphate-containing stones, whereas and acidic urine pH promotes uric acid or cystine stones
  – A very low-nutrient diet and high salt diet both increase risk
  – Decreasing calcium intake increases risk (40,000 people, 1,050 mg to 600 mg/day)
• Other risks: obesity, insulin resistance, high glycemic index foods
• High protein and especially high animal protein increases risk (see class readings)
• Protective diet
  – high potassium (López and Hoppe, 2010)
  – increased calcium (at least 1,000 mg/day)
  – complex carbohydrates, vegetables and fruits, moderate protein, moderate fats
**Don’t forget dietary guidelines; recommend 2-2.5 liters/day of water or better, aquaretic tea and cranberry; plus increased exercise!**

- **Aquaretics**
  - uva-ursi, goldenrod, cleavers, horsetail, lovage root, parsley (herb, root), celery, juniper berry

- **Lithotriptics**
  - hydrangea root, knotweed (*Polygonum aviculare*), cleavers (fresh juice), nettle leaf juice, corn silk, gravel root (*Eupatorium purpureum*),

**smooth muscle relaxants to help them pass**
- crampbark, black haw, kava, California poppy, wild yam
Urolithiasis

- Urinary stones are classified as oxalate stones, calcium stones, urate stones, cystine stones, and phosphate stones according to the substances contained in them. Making the appropriate dietary changes is generally a sufficient prophylactic measure.

- Around two-thirds of all urinary stones are small enough to be passed spontaneously.

Specifics:
- Parsley leaf, root (*Petroselinum crispum*)
- Gravel root (*Eupatorium purpurea*)
- Hydrangea (*Hydrangea arborescens*)
- Uva ursi (*Arctostaphylos spp.*)
- Green tea (*Camellia sinensis*)
- Pellitory of the wall (*Parietaria*)
Benign Prostatic Hyperplasia

- The prostate gland is found between the bladder and urethra; as men age, the gland often enlarges, slowing the flow of urine
- Symptoms: night-time urination (nocturia), urge to urinate more frequently during the day, slow starting, dribbling, slow stream
- Common medical treatments: surgery, finasteride (Proscar) can shrink prostate but has some side effects
- Surgery is most common treatment, is performed through urethra and has the risk of bleeding, infection, impotence
Spotlight Herb—Cranberry

- 5th most potent antioxidant fruit, high in phenolics
- Studies: help prevent cancer, heart disease, UTIs
- Cholesterol
- Sidney stone prevention
- Cranberries contain a substance that can prevent bacteria from sticking on the walls of the bladder
- 63 clinical trials, 8 meta-analyses
- The bacterial anti-adhesion activity of *cranberry* proanthocyanidins (PACs) has been demonstrated in vitro
- Studies have been equivocal, however, some positive trials have been published

- RDBPC trial: Among women undergoing elective benign gynecological surgery involving **urinary** catheterization, the use of **cranberry** extract capsules during the postoperative period reduced the rate of UTI by half (Foxman *et al*., 2015)
- RDBPC trial: All three **cranberry** extracts (36 mg PACs) significantly increased anti-adhesion activity in urine, from 6 to 12 hours after intake of a single dose standardized to deliver 36 mg of PACs (as measured by the BL-DMAC method), versus placebo (Howell *et al*., 2015).
Cranberries are dwarf shrubs of the family Ericaceae, genus *Vaccinium* and subgenus *Oxyccoccus*.

There are four species of cranberry:

- *Vaccinium Oxyccoccus* or *Oxyccoccus palustris*
- *Vaccinium microcarpum* or *Oxyccoccus microcarpus*
- *Vaccinium macrocarpon* or *Oxyccoccus macrocarus*
- *Vaccinium erythrocarpum* or *Oxyccoccus erythrocarpus*
Cranberry Bogs
Phytochemicals in Cranberries

Cranberries contain many phenolic compounds:

- Anthocyanins
- Flavonoids
- Proanthocyanidins
- Condensed tannins
- Low molecular weight phenolic acids
Phytochemicals in Cranberries

- Vinson *et al* showed that cranberries have the highest content of total phenolics per serving by weight among 20 analyzed fruits (373mg of total phenols/55grams of cranberries).

![Figure 2. Amount of total phenols in fruits (as catechin equivalents) on the basis of serving size.](image)

Vinson, 2001
Benign Prostatic Hyperplasia

- Saw Palmetto (*Serenoa repens*)
- Nettle root, rhizome (*Urtica spp.*)
- Pygeum (*Prunus*)
- Pumpkin seed oil (*Cucurbita pepo*)
- Small-flowered willow herb (*Epilobium spp.*)
- Goldenrod (*Solidago spp.*)
Goldenrod

- **Solidago canadense**
- Daisy family, different species indigenous to North America, Europe
- Mild antiseptic, increases blood flow to urinary tract, promotes healing, antiinflammatory
- Useful with other herbs like pipsissewa as a general urinary tonic
- Use with prostate herbs; has antiinflammatory effect
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Uva-Ursi

- *Arctostaphylos uva-ursi*
- Common wild plant and cultivated ground cover in northern North America and Europe
- Use fresh new leafy shoots
- Strong antiseptic, diuretic
- Take a tea or tincture
- Short-term use only (1-2 weeks); can be irritating
- Dose of uva-ursi recommended by the Commission E is 3 g leaf extracted in 150 ml water by either hot or cold infusion up to four times daily, providing 400–840 mg arbutoside
Corn silk

- The stigmas of *Zea mays*
- contains allantoin
- soothing, antiinflammatory
- healing, helps prevent, reduce scarring
- promotes healing
Kava

- Traditional Pacific drink
- Euphoriant, relaxant, anxiolytic, soporific
- Efficacy, effect depends on
  - set and setting
  - cultivar, preparation
  - how one is feeling to begin with
- Traditionally used for urinary tract infections to relieve pain, spasms and increase urine
Berberine-Containing Herbs

- *Mahonia aquifolium* (Oregon grape root)
- Other plants: coptis, goldenseal, barberry
- Berberine is a strong antibacterial, antifungal and antiinflammatory (heat-clearing) substance found in a number of herbs; used worldwide
- Berberine is weakly absorbed from gut but still effective

*Berberis vulgaris*
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Horsetail

• *Equisetum arvense, E. hyemale* used in TCM, Europe
• Contains organic silica in the form of silicic acid
• Mild diuretic (aquaretic), cleanser, alterative (improves health of the tissues)
• Don’t use it without tincturing, cooking (as a decoction)

*Equisetum Telmateia*
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Cleavers

- *Galium aparine*
- Rubiaceae or coffee family member
- Common native in North America and Europe, weedy, rough-hairy herb
- Contains iridoid glycosides which are unstable, tincture fresh, use juice or stabilize juice with 25% ethanol
- Mild antiseptic, cleanser, aquaretic
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Juniper Berry

- *Juniperus communis*
- The berries of other local species can be used
- Strong antiseptic, aquaretic, antiinflammatory
- Avoid during pregnancy, with kidney infections
- Limit use to bladder infections, rheumatism, 2-3 weeks at a time
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Dandelion Leaf

- *Taraxacum officinale*
- Asteraceae or daisy family
- Leaves have aquaretic effects
- Increases urine output to “flush” wastes from urinary tract
- Mild antiinflammatory because of flavonoids and sterols
- Use as a tea or tincture
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Garlic tincture

- *Allium sativum*
- Crush garlic cloves and add to 100 proof vodka, steep for 2 days, press, discard pulp and filter for use; store in refrigerator
- Take 1-3 droppersful several times a day for infections of all kinds
- Highly effective against many kinds of pathogenic organisms; some effectiveness against *E. coli*
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Kidney Yin Tonics

• Look for reddish tongue with little or no coating, night sweats, fatigue, weak knees or ringing in the ears (signs of Kidney yin deficiency)

• Herbs:
  • Rehmannia
  • American ginseng
  • Burdock root
  • Nettle leaf and seed

• Take in tea form for at least 2-3 months
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Marshmallow Root

- *Althea officinalis*
- Mallow family member
- Mucilaginous root brewed as a decoction, along with other herbs
- Mildly antiinflammatory, replaces the body's natural mucus
- Commonly used for urinary, upper respiratory tract and bowel infections and inflammations
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Pipsissewa

- *Chimaphilla umbellatum*
- Native plant from the huckleberry family of mixed conifer forests of the n U.S.
- Widely used by native American indian tribes as medicine
- Contains mucilage, quinones that help disinfect the urinary tract, slightly increase urine output
- Use as a tea (1 tsp/cup, 2 x daily) or tincture (2-3 ml, 2-3 x daily)
Materia Medica

Usnea

- *Usnea* spp.
- A lichen is a symbiotic relationship between a blue-green algae and a fungus
- Epiphytic (hangs out) on trees and shrubs; bioindicator for pollution
- Contains lichen acids (phenolic compounds) which are strongly antibacterial
- Poorly absorbed from gut