

Herbs for Relieving Chronic Renal Failure

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Abstract

Chronic kidney failure is a significant problem in modern society. Botanical medicine can be used to help forestall the need for dialysis by treating the causes and effects of renal failure, as well as reducing the many adverse effects of dialysis itself.

Botanicals used to treat kidney failure include: *Rheum palmatum* (Chinese rhubarb, da huang), *Ephedra distachya* (ephedra) stem, *Geranium thunbergii* (Thunberg's cranesbill) root, *Cinnamomum cassia* (cassia) bark, Bao yuan da huang tang (a decoction of *Panax ginseng* [Asian ginseng] root, *Astragalus membranaceus* [astragalus] root, cassia bark, *Glycyrrhiza uralensis* [licorice] root, and Chinese rhubarb), *Lespedeza capitata* (round-headed lespedeza), *Silybum marianum* (milk thistle) seed, *Urtica dioica* (stinging nettle) seed, *Parietaria judaica* (pellitory-of-the-wall) herb, *Orthosiphon stamineus* (Java tea), *Cordyceps chinensis* (cordyceps, Chinese caterpillar fungus), *Centella asiatica* (gotu kola), and *Capsicum* spp. (cayenne).

Introduction

Gradual destruction of sufficient nephrons to cause chronic renal failure represents a massive problem in the developed world. Diabetic nephropathy is the major culprit, but lupus nephritis and other immunologic nephritides, chronic urinary-tract obstruction (such as that caused by benign prostatic hypertrophy [BPH]), and chronic overuse of nonsteroidal anti-inflammatory drugs and aspirin are also significant contributors. Hypertension is believed to contribute to renal failure, although this has not been proven in controlled, prospective clinical trials. Regardless of the causes, chronic renal failure is a major burden.

The development of dialysis has allowed people to survive much longer with renal failure than they would have in the past, creating an enormous pool of patients with severe chronic illness. Although extending life is beneficial to those affected by renal failure, it comes with high costs, both in terms of money and

quality of life. Botanical medicine has much to offer not only to help forestall the need for dialysis by treating the causes and effects of renal failure, but also to reduce the many adverse effects of dialysis itself.

Human beings are born with an enormous excess of nephrons—on the order of twice as many as are needed for day-to-day survival.¹ This appears to be because hunter-gatherers (and presumably prehuman omnivorous ancestor species) would have periods of massive intake of protein when a large animal was killed and eaten (essentially all at once because of the lack of an efficient way to preserve meat), and thus the kidneys would periodically have to activate far more nephrons to handle the excess nitrogen intake.²

In most parts of the developed world, our diets have changed radically, with high intakes of animal protein essentially every day. This leaves little reserve nephron mass to handle additional challenges and increases the potential development of renal failure. Therefore, as is practically always the case, lifestyle and dietary changes are critical in preventing renal failure. This line of evidence provides one more reason for a move toward a more vegetarian diet for the large majority of people.

Rhubarb Root

Several herbal medicines appear to have the ability to protect nephrons against a wide range of insults. *Rheum palmatum* (Chinese rhubarb, da huang) root is an interesting example. Traditionally, people looked at this member of the Polygonaceae family as a cathartic laxative. Sufficient doses of the anthraquinone glycoside-rich root definitely can provoke a bowel movement. To the consternation of proponents of the pharmacologic model (i.e., one herb with one active constituent having one effect on one disease), Chinese rhubarb can, and traditionally has, also been used to treat diarrhea. This is particularly true of the cooked root. The explanation is that the root also contains significant quantities of astringent tannins that can bind up discharges, and heat tends to render the anthraquinone glycosides inactive. Thus, depending on the exact dose and preparation of Chinese rhubarb root, it can have opposite effects on the gut.

The same anthraquinone glycosides that, in higher doses, can cause catharsis have nephroprotective effects at lower doses. Emodin, for instance, has been shown to inhibit renal tubular cell proliferation, a key pathologic process in various nephritides that can lead to renal failure.³ The tannins of rhubarb block the actions of uremic toxins and reduce protein catabolism, thus protecting the kidneys.^{4,5} Preclinical studies on other tannin-rich herbs, including *Ephedra distachya* (ephedra) stem,* *Geranium thunbergii* (Thunberg's cranesbill) root, and *Cinnamomum cassia* (cassia) bark have shown that they too can protect nephrons and reduce the effects of uremic toxins.⁶⁻⁸

Many clinical trials have been conducted in China on various preparations and doses of Chinese rhubarb root in patients with chronic renal failure.⁹ These studies have consistently shown a range of benefits, including lowering serum creatinine levels (a major surrogate marker for renal function) and offsetting metabol-

ic dysfunction related to kidney failure. Details of most of these trials are not readily available as they have not been published in English. However, some are available and illustrate the point.

In one open trial, 56 patients with chronic renal failure were treated with either *Bao yuan da huang tang* or standard supportive measures.¹⁰ *Bao yuan da huang tang* is a decoction of *Panax ginseng* (Asian ginseng) root, *Astragalus membranaceus* (astragalus) root, cassia bark, *Glycyrrhiza uralensis* (licorice) root, and Chinese rhubarb. Symptom scores improved significantly more in the herbal therapy group than in controls. Serum blood-urea-nitrogen (BUN) and creatinine in the treatment group were significantly lowered by the formula compared with the conventional-therapy group.

In 38 patients with moderate chronic renal failure, 1 g of Chinese rhubarb root extract per day led to significant decreases in serum BUN and creatinine.¹¹ In a comparison group of 5 healthy patients, the same extract had no effect on these parameters.

In one controlled clinical trial, 42 patients with terminal renal failure either took Chinese rhubarb root extract or had no additional treatment.¹² While serum BUN and creatinine were not affected in either group, serum high-density lipoprotein (HDL) cholesterol and albumin levels rose significantly while serum total and low-density lipoprotein (LDL) cholesterol levels fell significantly in the rhubarb group compared with the control group.

*Also known as *Ephedra vulgaris*, which contains the alkaloid ephedrine, like its better-known cousin *Ephedra sinica*. Ephedra remains in a legal limbo in the United States. The herb was banned for use in weight loss by Food and Drug Administration (FDA) regulation, but a circuit court judge in Utah has ruled that the FDA acted capriciously by banning all doses. The regulation does not clearly ban ephedra for other uses besides weight loss, and several places on the FDA website state that the agency's intention is not to block traditional use of the herb by practitioners.

Putative Renoprotective Herbs

Herb	Part used	Family	Level of support	Notes
<i>Lespedeza capitata</i> (round-headed lespedeza)	Flowering top	Fabaceae	PCT	Extremely safe
<i>Orthosiphon stamineus</i> (Java tea)	Leaf	Lamiaceae	H	Extremely safe; uncertain ecologic status
<i>Parietaria judaica</i> (pellitory-of-the-wall)	Flowering top	Urticaceae	H	Extremely safe
<i>Rheum palmatum</i> (Chinese rhubarb)	Cooked root	Polygonaceae	PCT	Constipation or catharsis in overdose
<i>Silybum marianum</i> (milk thistle)	Seed	Asteraceae	PCT	Extremely safe
<i>Urtica dioica</i> (stinging nettle)	Seed	Urticaceae	H, A	Not significantly diuretic, unlike leaf

Levels of support: PCT = preliminary clinical trials; H = historical use; A = anecdotal case studies.

Renoprotective Adaptogenic/Tonic Herbs

Herb	Part Used	Family	Notes
<i>Astragalus membranaceus</i> (astragalus)	Root	Fabaceae	Very safe
<i>Cordyceps chinensis</i> (cordyceps)	Cultivated mycelium	Clavicipitaceae	Best-studied in patients with renal failure
<i>Glycyrrhiza uralensis</i> (licorice, gan cao)	Root	Fabaceae	Can promote hypertension and edema in overdose
<i>Panax ginseng</i> (Asian ginseng)	Root	Araliaceae	Very safe
<i>Panax quinquefolius</i> (American ginseng)	Root	Araliaceae	Very safe



Silybum marianum (milk thistle).

Chinese rhubarb, along with the formula known as tong mai san, has been shown to be helpful in combination with hemodialysis for lowering serum nitrogen levels and reducing protein loss.¹³ Chinese rhubarb has also been shown to be more effective combined with captopril than captopril alone for reducing renal inflammation in patients with chronic kidney failure.¹⁴

Typical doses of Chinese rhubarb root are 300–3000 mg three times per day. The root should be simmered for at least 1 hour to reduce cathartic activity. If patients develop loose stools on the dose they are taking, the dose should be reduced or the root cooked longer. If the herb is taken as a tincture (of simmered root), the dose is 2–3 mL three times per day or whatever dose is subcathartic. At these doses, no adverse effects are usually observed except, rarely, mild constipation.

Round-Headed Lespedeza

A bushy plant native to the southeastern United States known as *Lespedeza capitata* (round-headed lespedeza) has also attracted attention for patients with chronic renal failure. For unknown rea-



Urtica dioica (stinging nettle).

sons, French and Italian researchers have done most of the work on this plant, and unfortunately none of it was very recent. This member of the Fabaceae family deserves more widespread use.

Lespedeza is loaded with proanthocyanidins, which give its extracts a vibrant purple-red color. These compounds have been shown to have angiotensin-converting enzyme (ACE) inhibiting effects in the laboratory.¹⁵

Although the full text or even an abstract could not be located, at least three European clinical trials have been conducted on extracts of lespedeza for patients with chronic renal failure.^{16–18} At least one of these utilized an injectable extract, which is not available in North America. The eminent German phytotherapist and physician Rudolf Fritz Weiss, M.D., commented that he often would see benefit with tinctures of lespedeza for both patients with acute and those with chronic renal failure.¹⁹

Typically, the flower tops of the plant are used. A dose of a tincture of fresh plant would be 3–5 mL three times per day for adults. There is no known toxicity from this plant. It may also have phytoestrogenic effects, so in overdose situations it might cause estrogen excess symptoms, such as moodiness or fluid retention. It is also not known if the many other species in this genus are interchangeable.

Other Renoprotective Herbs

Milk Thistle

A variety of other herbs have been used for their renoprotective effects, though none have been as well-researched as Chinese rhubarb and round-headed lespedeza. *Silybum marianum* (milk thistle) seed is generally thought of as a liver-supporting herb, but actually has all the same actions on the kidney as it has on the liver, as we have previously discussed in detail.²⁰

With one minor exception, milk thistle has not been the subject of clinical trials to validate its effect in patients who have renal failure. One small trial showed that milk thistle seeds could improve the observed imbalance in thiols in patients with end-

stage diabetic nephropathy.²¹ Milk thistle is very safe, so it can be used, knowing that it is highly unlikely to make patients worse. Typical doses of standardized extracts of milk thistle seeds are 140 mg three times per day. Crude ground seeds can also be taken in the amount of 5 g three times per day. The dose of fluid extract is 3–5 mL three times per day.

Stinging Nettle

Urtica dioica (stinging nettle) seed has been recommended as a renoprotective agent. Stinging nettle leaf is relatively well-known as a diuretic and inflammation modulator, and the root is known as a remedy for BPH.²² However, the seed is much less diuretic and does not seem to affect the prostate, but instead seems to have a direct supportive effect on nephron function.

Two published case studies by the herbalist Jonathan Treasure, M.N.I.M.H., R.H. (AHG) illustrate that nettle seed can be quite effective for lowering serum creatinine levels and reducing symptoms in patients with chronic renal failure.²³ Nettle seeds appear to also be hepatoprotective based on studies in rodents.²⁴ Clinical trials are definitely warranted with this completely safe herbal medicine. The dose of tincture is 3–5 mL three times per day.

Pellitory-of-the-Wall

Parietaria judaica (pellitory-of-the-wall) herb is a relative of stinging nettle native to northern Eurasia without any stingers. It has historically been considered a kidney tonic. Although no published reports have been located on the effects of this plant, clinically, it seems to be very effective and completely safe in patients with chronic renal failure. Typical doses of tincture are 3–5 mL three times per day.

Java Tea

Orthosiphon stamineus (Java tea) is a magnificent flower native to Indonesia. This tropical mint has a long tradition of use as a diuretic and has demonstrated this and a uricosuric action in pre-clinical testing.²⁵

Adaptogens and Tonic Renal Protectors

Besides herbs that seem to protect nephrons directly, there are also those that act in a more general way to strengthen the body and, in particular, strengthen the kidneys. These include tonic herbs, used to normalize functions of specific systems, and adaptogenic herbs that help the body cope very generally with all types of stressors.²⁶ These herbs can be used to help the kidneys cope with whatever stressors are causing renal failure, as well as helping the rest of the body deal with the consequences of renal failure.

Cordyceps

Cordyceps chinensis (cordyceps, Chinese caterpillar fungus) is a remarkable fungus used in traditional Asian medicine to support the kidneys. It is a wonder that it was ever decided to use this fascinating organism, known in Chinese as duong chong xiao cao (“summer grass, winter worm”).



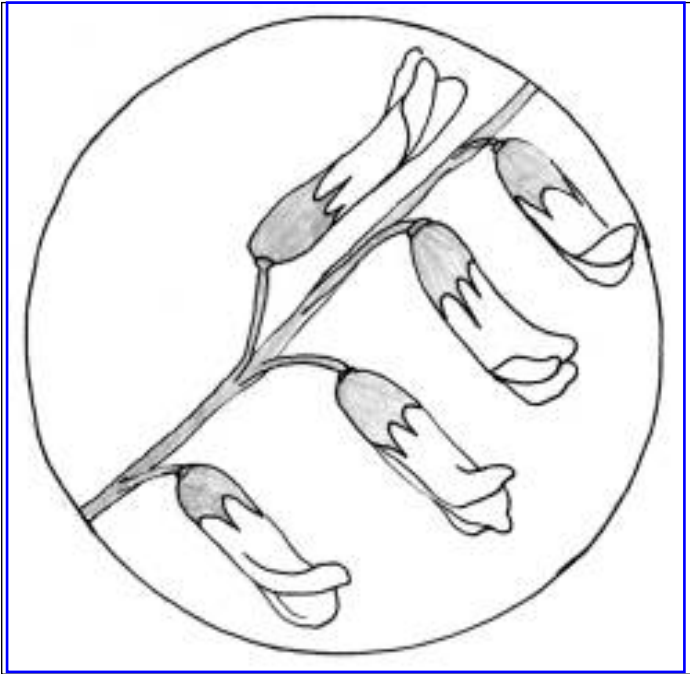
Orthosiphon stamineus (Java tea).

In the wild, spores from cordyceps are carried by rainwater to underground bat moth caterpillars, which it parasitizes. The caterpillars eat the roots of a particular plant's roots. In late autumn, the spores sprout into a mycelium that overwhelms the caterpillar by the next summer, eventually sprouting fruiting bodies up to 5 cm tall, which were the principal parts used.

In modern times, cordyceps from the wild has been vastly overharvested and is seriously threatened as a result. Most cordyceps on the market today is mycelium grown in culture in the laboratory, which, although not exactly the same as the original medicine (in particular because the original often contained some caterpillar, which might also be medicinal), is a much more sustainable method of production. Only cultivated cordyceps mycelium (also known as jin shui bao) should be used because of its precarious environmental status.

Numerous clinical trials have been conducted on cordyceps in patients with renal failure. The longest trial ran for 10–12 months and used 3–5 g of natural cordyceps daily.²⁷ The trial showed a significant improvement in renal and immune function in patients who had kidney failure. In a 1-month trial comparing natural cordyceps fruiting bodies with cultivated cordyceps mycelium, both were able to lower serum BUN and creatinine and reduce anemia, with no significant difference between the two forms of the fungus.²⁸ These results support the concept that mycelium can be used effectively in place of the traditional fruiting bodies.

One trial lasting 1 month used 5 g of cultivated cordyceps mycelium.²⁹ The trial showed reduced serum BUN and creatinine and reduced symptoms in treated patients. Enhanced immune function and improved T-lymphocyte subset composition coinciding with the renoprotective effects have been documented with cordyceps mycelium as well.³⁰ Typical doses of mycelium have been 5–9 g per day, with essentially no adverse effects being reported.



Astragalus membranaceus (astragalus).

Astragalus

Astragalus membranaceus (astragalus) root has been used in traditional Asian medical systems to support patients with chronic renal failure. As noted above, the formula bao yuan da huang tang, which has been shown to help patients who have renal failure, contains not only Chinese rhubarb, but also astragalus as well as two adaptogens (Asian ginseng and licorice).

Another formula containing astragalus, tang fu kang, has also been shown to be helpful in protecting rodents against diabetic nephropathy.³¹ Astragalus compounds have been shown to have angiotensin-receptor downregulating effects, which although shown in a particular study to protect the hearts in diabetic rats could also protect the kidneys.³²

More thorough research is needed, but astragalus appears to be promising. Typical doses of the root are 3–5 g three times per day and of tincture or glycerite the dose is typically 3–5 mL three times per day or more frequently.

Other Adaptogenic Herbs

Other adaptogenic and tonic herbs are almost certainly beneficial for patients with renal failure; those mentioned above are just a few that have been looked at to some degree in this specific setting.

Formulating for Patients Who Have Renal Failure

When working with an individual patient with renal failure, it is important to assess the specific details of that patient's case, although basically all patients will benefit from renoprotective herbs. Dr. Yarnell has tended to use a variety of renoprotective herbs together, believing that they will act synergistically to pro-

vide a better result than any one in isolation. Some practitioners prefer to use a single renoprotective herb, and this can also be helpful.

Patients who are very fatigued, have low libido, and have serious immune dysfunction should have adaptogens emphasized in their herbal formulas. If patients are having particular trouble with osteodystrophy, then *Centella asiatica* (gotu kola), a connective-tissue supportive herb, along with nutritional and lifestyle treatments will need to be included. If itching is a serious problem, then topical *Capsicum* spp. (cayenne) has been shown to be helpful in clinical trials. If dyslipidemia is serious, then *Allium sativum* (garlic) or other lipid correctives are warranted. If low appetite is causing problems, then bitter herbs such as *Achillea millefolium* (yarrow), or aromatic digestive stimulants such as *Zingiber officinale* (ginger) should be included in the formula.

Conclusions

Botanical medicine offers many interesting possibilities to help prevent or treat chronic renal failure. It is unfortunate that many of these herbs are overlooked, and that the initial exciting research findings have not been followed up with larger, more rigorous trials.

It is highly unlikely that nephroprotective herbs can bring completely destroyed nephrons back, but they are very promising for keeping existing nephrons working and possibly reviving partially damaged nephrons. Although this has yet to be proven definitely, we have seen patients develop modest improvements in glomerular filtration rates, which would suggest nephron recovery.

Adaptogens and other tonic herbs also offer a completely different approach to the immunologic aspects of renal failure, while simultaneously appearing to have nephroprotective benefits, compared with any treatments available in conventional medicine. □

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