IJKD KIDNEY DISEASES

Herbal Medicines Used in Kidney Diseases in Europe

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Special Report

INTRODUCTION

State of Phytomedicine in Europe

Phytopharmaceuticals have a long historical tradition. Through a method of trial and error, plant and plant extracts were tested and either retained or when displaying disagreeable side effects, discarded. For example, *Ononidis radix* has been verified for treatment of bladder calculi as first discovered by Dioskurides in 60 AD, and for kidney calculi by Schroder in the 17th century.[1] For these indications, these plants are still utilized until today.[2]

Phytopharmaceuticals are authorized drugs. Phytopharmaceuticals in Germany fall under jurisdiction of the German Drug Law (Arzneimittelgesetz § 2) and follow the European Union guidelines for what is termed „special" therapeutic procedures to include phytotherapy, homeopathy, and anthropomorphic healing methods.[3]

Phytopharmaceuticals are tested as all synthetic medical preparations for their quality, efficacy, and side effects. They are recognized as effective drugs by the Institut fur Qualitat und Wirtschaftlichkeit im Gesundheitswesen (IQWiG), Bundesinstitut fur Arzneimittel und Medizinprodukte (BfArM), both German national authorities, the European Scientific Cooperative on Phytotherapy (ESCOP), and the Cochrane Collaboration. The reasons for continued rigorous scientific study of phytotherapy are that the properties, mechanisms, human pharmacological effects, efficacy, and side effects in some fields have not been unequivocally proven.

Phytopharmaceuticals not only have fewer side effects, but also, according to surveys, are preferred by about 80% of the general population over medicines manufactured with synthetic chemicals.[3] Because phytopharmaceuticals have markedly fewer side effects, they can be bought without prescription, and they provide a broad pharmaceutical substance profile, making them an optimal alternative, especially for chronically ill patients. Since 2003, phytopharmaceuticals have been an inherent part of the German universities' medical curriculum.[4]

Despite all these known facts, phytopharmaceuticals are not prescribed as often as they should be by physicians. Although phytotherapy is scientifically sound and well documented, it must be also noted that there is a broad number of physicians and pharmacologists that are critical of its application, as compound drug substances defy rational explanation. The main reason is that phytopharmaceuticals cannot be simply compared to chemically defined medicines, because they are different in three ways, as described as follows:

Characteristic 1. The extract is the agent. Each extract is unique in its properties, depending on the quality of the drug and the method of extraction, their properties are individual to each. The efficacy of each extract is the result of its separate active ingredients. There are what is called in German *vielstoffgemisch*, which can literally be translated as *multidrug substances*, and *mehrstoffgemisch*, meaning *compound-drug substances*. We use the term multidrug substances to describe drugs that contain many unknown substances, some of which are toxic, and compound-drug substances, which are special extracts that produce only synergistic and complementary healthcare benefits. Figure 1 shows that an extract contains many different fractions with synergistic, antagonistic, partial

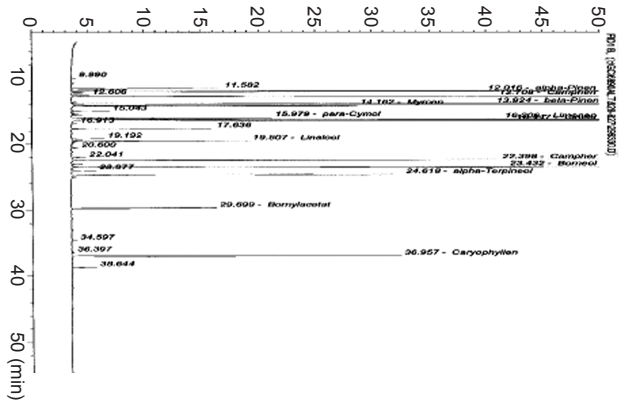

Figure 1. Gas chromatography of rosemary oil.

antagonistic, and toxic effects (Figure 1 shows gas chromatography of rosemary oil).

Characteristic 2. Not all types of extracts are equal. The quality of the drug depends on the manufacturing process of the extracting agent. Standardization is very important. Several extracts can show different efficacies.

Characteristic 3. Diversified action profile (pleiotropy) is another characteristic. Pleiotropy describes the ability of a substance to treat sickness and disease at multiple levels (eg, St John's wort and its component, hypericin, affect amino acetic acid receptors, dopamine receptors, and serotonin receptors). Most chemically synthesized substances do not display this unique ability. A typical example of pleiotropy is the plant *Sabal serrulata*, which is used for the treatment of benign prostatic hyperplasia because of its spares side effects in comparison with the synthetic medications such as 5α-reductase inhibitors and α1-adrenergic blockers.[5] There are some typical side effects of synthetic chemical prostate preparations. For example, 5α-reductase inhibitors such as finasterid can cause erectile dysfunction, reduced libido, and/or gynecomastia, and α1-adrenergic blockers such as tamsulosin may produce gastrointestinal problems, orthostatic hypotension, ejaculatory disorders, intraoperative floppy iris syndrome, and retrograde ejaculation. *Sabal serrulata* contains substances that exhibit characteristics of the α1-adrenergic blockers as well as the properties of 5α-reductase inhibitors, and it also shows antiphlogistic effects. The latter effects are clinically very important, because in a high proportion of patients, an accompanying prostatitis can be additionally cured using this herbal medicine. Ingredients, indications, and the clinical effects of *Sabal serrulata* are well known (Table 1). However, *Sabal serrulata* shows different effects such as antiproliferative (suppression of fibroblast growth factor), antiphlogogenic (suppression of prostaglandin synthesis), and antiandrogenic (suppression of α-reductase and aromatase). All of these support the fact that scientific investigation of phytotherapy must always include clinical studies about effects, mode of action, and efficacy of treatments.

The abovementioned characteristics of phytopharmaceuticals dictate a specific course of investigation. First-line research work must be the investigation of the effects and efficacy (in vitro

Table 1. Indications, Ingredients, Efficacy, and Effects of *Sabal Serrulata*

Sabal Serrulata	Characteristic
Ingredients	C8-C16 saturated fatty acid Fatty acid ethyl ester Fatty alcohol Hydroxy fatty acid χ- Linolen acid δ-7- and δ-5-phytosterol Water soluble, acid polysaccharide
Indications	Disorders during urination due to benign growth of the prostate, stages I and II, according to Alken, or stages II and III, according to Vahlensieck
Effectiveness/effects	Antiproliferation Suppression of fibroblast growth factor Antiphlogistion Suppression of prostaglandine synthesis Antiandrogenicity Suppression of α-reductase and aromatase
Clinical effects	Decreasing of nycturia, pollakiuria, dysuria, and residual urine Increasing of urine flow Studies versus placebo, finasterid, tamsulosin Dose: 320 mg/d

and in vivo). At any rate, one needs to consider this fact that the „effect" does not necessarily mean „efficacy."

AQUARETICS AND DESINFICIENTIA

Concerning their mode of action, there are different types of diuretics. Phytopharmaceuticals mainly belong to the groups of aquaretics and desinficientia. Aquaretica increases renal blood flow, glomerular filtration rate, and water diuresis. Desinficiencia has antibacterial effects, increases renal blood flow, and has antispasmodic effects. Indications of using phytopharmaceuticals (Table 2) in the treatment of kidney diseases are infection and inflammatory diseases such as cystitis, urolithiasis (phosphate and cystine calculi), irritable bladder, and benign prostatic hyperplasia. Phytopharmaceuticals, however, have no indications in acute and chronic glomerulonephritis, acute and chronic interstitial diseases, or renovascular hypertonia.

Table 2. Indications of Herbal Medicines in Urinary Tract Diseases*

Herbal Medicines	Indications
Aquaretics	
Betulae folium	UTI
Urticae herba/folium	UTI, UL
Solidaginis virgaurea herba	UTI, UL, IB
Phaseolifructus sine semen	UTI
Ononidis radix	UTI, UL
Orthosiphonis folium	UTI, UL
Juniperi fructus	UTI
Petroselini herba/radix	UTI
Ribis nigri folium	UTI
Levistici radix	UTI, UL
Orthosiphonis folium	UTI, UL
Graminis rhizoma	UTI
Equiseti herba	UTI, UL
Asparagi rhizome	UL
Desinficiencia	
Uvae uris folium	UTI
Bergeniae folium	UTI
Piri communisf olium	UTI
Nasturtii herba	UTI
Brosmae folium	UTI
Rhois aromaticae radicis cortex	UTI
Tropaeoli maji herba	UTI
Armoraciae rusticanae	UTI
Vitisidaeae folium	UTI
Santali albi lignum	UTI
Others	
Urticae radix	BPH
Scopliae rhizoma	IB
Hypoxis rooperi radix	BPH
Cucurbitae peponis semen	BPH, IB
Pollinis siccum	BPH
Sabal fructus	BPH

*UTI indicates urinary tract infections; UL, urolithiasis; IB, irritable bladder; and BPH, benign prostatic hyperplasia.

DRUG INTERACTIONS

Using herbal medicines, drug interactions have to be taken into account. New drugs such as cyclosporine are constantly appearing in the market. Casuistics are valuable tools in recognizing the potential interaction of phytopharmaceuticals (Figure 2).

A 55-year-old kidney transplant woman whose transplant was carried out in 1985 was being treated with cyclosporine (125 mg to150 mg, twice a day). This drug has a narrow therapeutic range. Thus, careful monitoring of its blood level is necessary. Plasma levels of cyclosporine remained stable over the years. In 1995, the patient started self-medication with St John's wort because of mild to medium depression. The standardized St John's wort extracts were taken at a dose of 450 mg, twice a day. At that time, regardless of fatigue, she was feeling well. Physical examination was unremarkable. Laboratory assessments between 1995 and April 2000 showed decreased cyclosporine plasma level and increased serum creatinine level. Nephrologists increased cyclosporine dose to 250 mg, twice a day. After April 2000, interaction of St John's wort with cyclosporine was recognized by accident and self-medication was stopped. After discontinuing treatment with St John's wort, plasma level of cyclosporine increased and remained within the therapeutic range, and kidney function remained stable. In this way, treatment with St John's wort was the cause of drop in plasma cyclosporine level. Uncontrolled variations in plasma cyclosporine level in patients taking St John's wort have important clinical implications in transplant patients.[6]

CONCLUSIONS

It can be concluded that there are quite a few phytopharmaceuticals which can be used effectively for treatment of the urinary tract diseases. The evidence level is II b, according to Sackett and Rosenberg.[7] Phytopharmaceuticals (aquaretics and desinficientia) are well defined in their indications, chemical compositions, pharmacological and

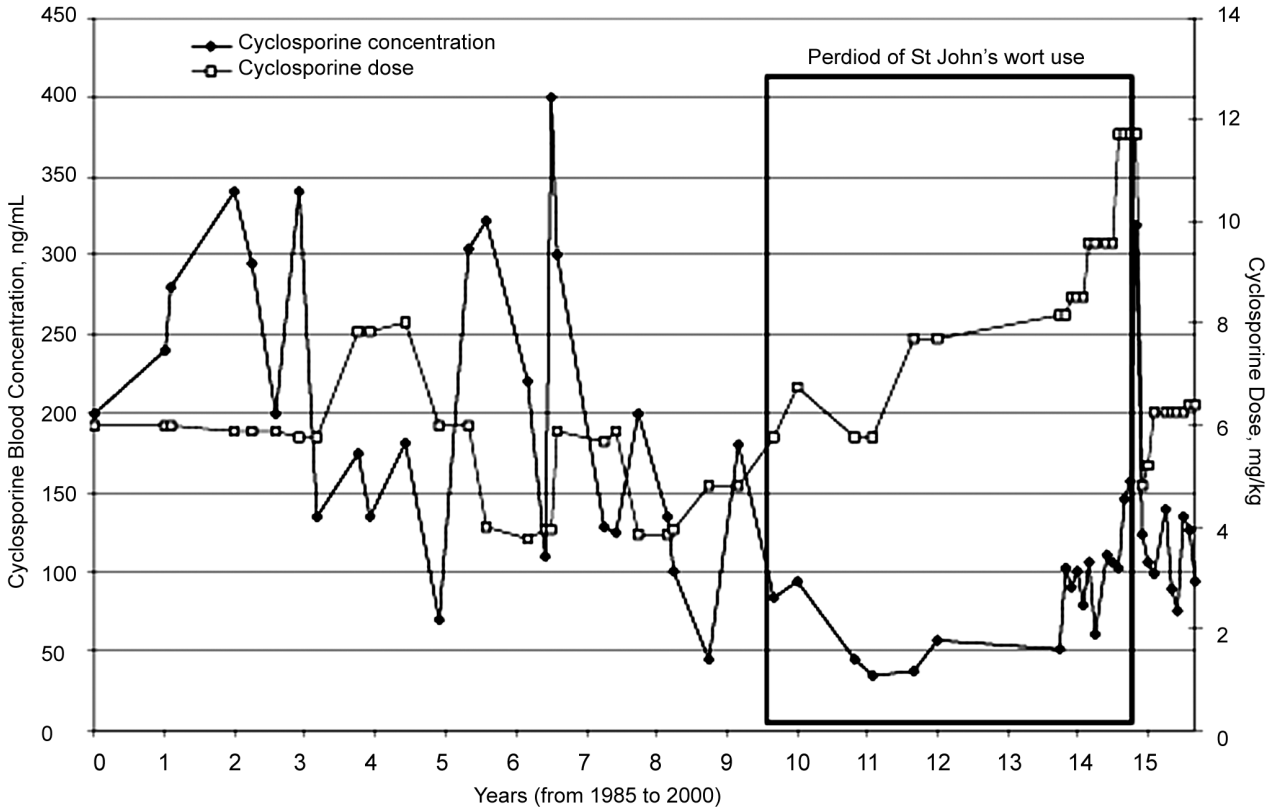

Figure 2. Example of drug interaction: cyclosporine and St John's wort.

pharmaceutical effects, and mode of action. Drug interactions also have to be considered with especial concern to kidney function.

CONFLICT OF INTEREST

None declared.

REFERENCES

1. Benedum J, Loew D, Schilcher H. Arzneipflanzen in der traditionellen medizin. 4th ed. Unkel (Germany): Kooperation Phytopharmaka Krahe Druck; 2006. p. 145.
2. Schilcher H, Kammerer S, Wegener T. Leitfaden phytotherapie. 3rd ed. Munchen: Elsevier, Urban & Fischer; 2007. p. 644ff.
3. Marstedt G, Moebus. Inanspruchnahme alternativer methoden in der medizin. Berlin: Verlag Robert Koch Institut; 2002; p. 9.
4. Beer AM, Osenberg D, Rubenthaler F, Wiese M. Neuer querschnittsbereich "rehabilitation, physikalische medizin und naturheilverfahren": Konzeptionelle gestaltung und umsetzung an der ruhr-universitat Bochum. Phys Med Rehab Kuror. 2006;16:M23-6.
5. Schlenker B, Beer AM, Gratzke C, et al. Medikamentose therapie des benignen prostatasyndroms. MMW Fortschr Med. 2009;41:33-6.
6. Beer AM, Ostermann T. Johanniskraut: interaktion mit cyclosporin gefahrdet nierentransplantat und erhoht die taglichen medikationskosten. MedKlin. 2001;96:480-4.
7. Sackett DL, Rosenberg WM. The need for evidence-based medicine. J R Soc Med. 1995;88:620-4.

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