

## Phcog Rev.: Review Article

# Medicinal Herbs: Myths and Facts are they all safe?

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There has been a virtual explosion of interest in all kinds of alternative therapies, in particular those, which have been around for thousands of years. Naturally, in an illness where there is no "cure" and in which pharmaceutical drugs typically produce side effects, people look for other remedies. The use of herbal heritage has become a part of general health care by the tribes since time immemorial. The use of modern medicines of synthetic origin is believed to impart dramatic results in a short span in the therapeutic field has a hidden drawback of serious afterward consequences on the health on prolonged treatment due to various pathological, pharmacological and chrono-pathological parameters of the mankind.

In spite of overwhelming influence of modern medicine and tremendous advances made on the production of synthetic drugs, traditional medicaments designated now a days as herbal drugs in different places in literature, have retained their place in therapy. The World Health Assembly emphasized the need to ensure quality control of medicinal plants with appropriate moral techniques and suitable standards, as it is estimated that about 80% of the people living in developing countries mainly depend upon herbal drugs for their preliminary health care needs. The World Health Organization, to achieve their goal of "health for all" has recommended to all member countries to actively promote native medicines of their country as well as to initiate steps to conserve and/or to cultivate medicinal plants so that genuine raw materials become rapidly available to a large section of population.

Common reasons for use of herbal drugs include health promotion; disease prevention; poor outcomes and limited treatment options for a serious illness; exhaustion of conventional therapies; dissatisfaction with, or lack of efficacy of, conventional therapies; significant side effects or risks associated with conventional medicine; belief that herbal and natural products are better or safer; preference for personal involvement in the decision-making process; and cultural or spiritual preference<sup>1</sup>. As herbal medicine has become more and more popular, there has been a huge increase in the range of remedies available over the counter. Many of us forget that herbs are drugs since they contain many chemicals and therefore just because something is "natural" don't mean that we should be lulled into a false sense of security. Although selected products may have therapeutically beneficial effects, many cause adverse effects<sup>2</sup> and drug interactions are similar to those experienced with conventional agents<sup>3</sup>.

Recently there has been an upsurge in healthy living and people come across many herbal preparations advertised

daily. Many companies selling herbs are now claiming to cure everything from impotence to hair-loss. Also, many herbal medicine advocates propose that the therapeutic benefit of herbal products stems from the synergistic action of the several natural components in the herb. They argue that some constituents that are thought to be inactive may play a role in the pharmacokinetics of the active component, and that a standardized extract would diminish or eliminate the beneficial effects of the heterogeneous botanical product<sup>4</sup>. No evidence currently is available to support or refute this argument.

But how safe are these products really? It is true that when taken in the prescribed quantity, most of these products are safe, but the indiscriminant use of herbal medications is a considerable danger to our health. What many people don't know about herbs could kill them.

There are four main reasons why people choose herbal products:

- They erroneously believe herbal products are superior to manufactured products.
- They believe herbal products are less expensive than synthetic drugs.
- They are not satisfied with the results they get with manufactured drugs.
- They do not feel their physicians have identified the problem, so they turn to herbal remedies as another option.

This increasing use of herbal products has some very important implications for the older population and for those heading towards their senior years. Seniors have a higher incidence of illness and chronic conditions and because of this take a higher per capita number of different prescription medications. Because of this they need to be especially careful when adding herbal medications to their health regime.

This is not to say that all these remedies are unsafe, impure or ineffective. Some are made by reputable companies under near-pharmaceutical conditions. Some have been tested in well-designed clinical trials. Still, the consumer has no way to know exactly what is in the bottle and what effects the contents may have on health. Reports of disastrous effects abound, including mania, hemorrhage, coma, heart and kidney damage, liver failure and cancer.

In addition, herbal products may be contaminated with hazardous substances: dangerous plant chemicals, toxic metals, disease-causing micro-organisms, fumigants and pesticides. In some cases, none of them are listed on the label.

The lack of consistent labeling on herbal products can be a source of consumer frustration. An herb is categorized as a nutritional supplement, so its possible health benefits cannot be stated on the label, leaving the consumer with little information. The label may not list why the product should be taken, how much to take, how often, the active ingredients, how much of the active ingredients are in the supplement, or the side effects.

Herbal remedies are considered natural alternatives to certain drugs, but they can also be dangerous when taken during pregnancy. Many herbs contain chemicals that can cross the placenta to the baby, and some can cause premature contractions. As with all medications, expected mothers should avoid taking any herb during the first trimester and use only minimal amounts for short periods of time thereafter, and then only when needed. There are several herbs, which should be completely avoided during pregnancy. Some of them include purgative drugs like *Aloe Vera*, *Primula veris*, Elder bark (*Sambucus nigra*), Rhubarb root (*Rheum palmatum*), Senna (*Cassia angustifolia*) etc. Other uterine stimulant drugs include White cedar (*Thuja occidentalis*), Barberry (*Berberis aristata*), Basil oil (*Ocimum basilicum*), Fetid bugbane (*Cimicifuga foetida*), Broom (*Cytisus scoparius*), Clove oil (*Eugenia caryophyllus*), Tansy (*Tanacetum vulgare*), Common juniper and juniper oil (*Juniperus communis*), Lady's mantle (*Alchemilla vulgaris*), Liferoot (*Senecio aureus*), European Mistletoe (*Viscum album*), Indian wormwood (*Artemisia vulgaris*), Garden Rue (*Ruta graveolens*), Sassafras (*Sassafras albidum*), Shepherd's purse (*Capsella bursa-pastoris*), Southernwood (*Artemisia abrotanum*), Squill (*Urginea maritima/Urginea indica*), Wild yam (*Dioscorea villosa*), Wormwood (*Artemisia absinthium*) etc. that may cause birth defects which could damage the fetus. Several other herbs like Comfrey (*Symphytum officinale*), Autumn crocus (*Colchicum autumnale*), Liferoot (*Senecio aureus*), Mistletoe (*Viscum album*) are known to cross placental barrier and cause birth defects. Clinical reports of Korean ginseng (*Panax ginseng*) suggest that high doses in pregnancy can lead to androgynous babies (caused by over stimulation of male sex hormones).<sup>5,6</sup>

While advising about herbal remedies for children, the researchers suggest parents should be cautioned not to equate "natural" with "safe." It has been a general tendency of the mothers to frequently treat their children's minor ailments with herbal remedies. This is not at all unusual; nowadays, more and more parents are not only taking herbal remedies themselves but also giving them to their children. The trend is gathering a surprising amount of momentum. Some parents are turning to herbal remedies because they are suspicious of pharmaceutical drugs, or because prescription drugs aren't solving their children's chronic health problems, such as frequent colds and ear infections. Many doctors feel that it's too dangerous to give herbal remedies to children. Because herbal remedies are not regulated as drugs, and because manufacturers are not responsible for proving the safety and efficacy of their products, one can't be sure what he is getting.

Many herbal remedies are used to treat disorders that keep us awake, like insomnia. Herbal remedies are also used as stimulants to combat excessive daytime sleepiness, or even just to give a boost when energy begins to wilt. The stimulant herbal drug of choice is caffeine in a cup of tea or coffee to get someone going in the morning, and a few more throughout the day to keep the energy level high. Caffeine is a drug and in fact, it is the most widely used drug in the world. Caffeine can cause irregular heartbeats, ulcers and heartburn. The stimulant herb, ephedra (*Ephedra gerardiana*) which is used to relieve bronchial congestion or asthma induced bronchial constriction can cause heart attacks, strokes and other health problems. Another stimulant (and supposedly an aphrodisiac,) yohimbine causes hypertension, increased heart rate, irritability and water retention. There are several herbal sedatives available, including valerian (*Valeriana wallichii*), hops (*Humulus lupulus*) and German chamomile (*Matricaria chamomilla*). These herbs seem to have few side effects and anyone who suffers from allergies should avoid it. Similarly, Aristolochia plant species contain toxic and carcinogenic aristolochic acids associated with kidney failure and cancer. Many common herbs like garlic (*Allium sativum*), ginger (*Zingiber officinale*), ginkgo (*Ginkgo biloba*) and ginseng (*Panax ginseng*) are known to interfere with anticoagulants which may cause spontaneous and excessive bleeding. Garlic is also known to decrease the effectiveness of immunosuppressants and HIV protease inhibitors. Ginkgo can also increase the amount of antidepressant medication in the blood. When combined with antipsychotic medications, ginkgo may cause seizures. Used with warfarin, ginseng can increase your risk of bleeding problems. Ginseng with phenelzine may cause headache, trembling and manic behavior. Ginseng may interfere with digoxin's pharmacologic action or the ability to monitor digoxin's activity. Also, the combination of St. John's wort (*Hypericum perforatum*) with some antidepressants, such as selective serotonin reuptake inhibitors, may cause an excess of serotonin (serotonin syndrome). Typical symptoms include headache, stomach upset and restlessness. St. John's wort may reduce the effectiveness of some oral contraceptives. Senna and *Cascara sagrada* which are used to relieve constipation may cause diarrhoea, a more serious condition in children than in adults. Consumed over an extended period of time, they may result in potassium depletion and even heart problems. Liquorice (*Glycyrrhiza glabra*), which is used as a cough remedy and for stomach problems among other things, can raise blood pressure in some people. Bearberry (*Arctostaphylos uva ursi*), which is in remedies for urinary infections and fluid retention, can irritate the kidneys if used excessively.<sup>6-9</sup>

There is yet another complexity that the herbalists around the planet don't use one plant. Most herbalists use six, eight, ten, twelve plants for a given individual. Some of the plants will be used to diminish symptoms of the disease. Some will be used to treat the underlying abnormality. Some will be used to improve the digestion of the rest of the plant so it can be absorbed more completely. While efforts continue to establish and regulate good manufacturing practices for herbals, no standards or guidelines exist to assure quality.

There are no provisions for pre-marketing approval to demonstrate safety and efficacy. Plant materials may be misrepresented or substituted by manufacturers, or may contain environmental or man-made contaminants. They may contain little or none of the plant materials listed on the label, or an entirely different plant material than is listed on the label. Furthermore, the ingredients aren't always listed on the packaging of herbal products; the amount of the active ingredient found in each dose is not necessarily standardized; and, in some instances, the herbs we buy no longer contain the active ingredient thought to have curative properties.

The fact that there are no quality controls on herbal remedies leaves open a number of possibilities. For one, plants vary widely in the amount of an allegedly beneficial substance they contain, according to where they grew, the weather in the growing season, time of harvest, soil composition, etc. Once harvested, the leaves, roots, or other elements can then be mixed with others, adulterated, or contaminated, making a given dose of an herbal "variable and unpredictable," a special concern where children are concerned.

**General advice to consumers on the use of herbal remedies**

- Because herb/drug interactions can occur, the patient should consult the physician if he is using and/or thinking about using an herbal remedy.
- People should be aware that just because something is "natural" does not mean that it is safe.
- Lack of standardization can result in differences among particular products, and even among different batches of a particular brand.
- Herbal remedies should not be used in pregnancy, breast feeding or even considering getting pregnant.
- Avoid giving herbs to infants.
- Never use larger than the recommended dose.
- Long-term use of herbal remedies should be avoided except under the supervision of a healthcare provider.
- Avoid herbal remedies with known toxic effects and known side effects, such as ma huang.
- Any illness that does not get better in a reasonable time requires medical attention. If symptoms persist, the physician or the pharmacist must be consulted.
- If any one suffers an adverse reaction to a herbal remedy, it must be brought to the notice of the physician or pharmacist.

Marketing plays a big part in the use of herbal products and the media help significantly to provide information about natural health products to consumers. There is caution that one of the biggest problems with many mass media stories today is scientific inconsistency. There are many articles about the possible uses for herbal products yet few include the scientific evidence to support many of the claims made. Critics tend to focus on two areas -- safety and the lack of evidence of effectiveness. Unlike conventional drugs, herbal products are not regulated for purity and potency and this could cause adverse effects and drug interactions. Studies of

herbal medicines are fewer than for drugs mainly because herbs cannot be patented so there is little money to be made by funding studies. The controversy surrounding the herbal industry continues and although regulations are being put in place the situation is still "buyer beware." Currently no minds are being changed.

**The Role of Pharmacists**

Many times, the pharmacists are frequently asked by both patients and other health care providers about the use of herbal products. The basis for pharmacist involvement with herbal products is an extension of their established roles in pharmaceutical care, clinical pharmacy practices, and collaborative health care teams. The pharmacist plays a key role in providing care to patients who are taking or contemplating taking herbal products. The variability in the degree of scientific evidence on efficacy and safety available to support the use of herbal products makes it even more imperative that pharmacists assume an active role in this area of practice. Ideally, pharmacists should stock only those products that were manufactured with conformity to GMP guidelines. In addition, products containing only the part of the plant that was proven in clinical trials to be effective should be stocked. Herbal and natural products with questionable or unproven efficacy or those known to be harmful should not be inventoried, recommended, or sold. To encourage consumers to discuss their use, inquiries should be conducted in an open and nonjudgmental fashion similar to the manner of inquiring about other over-the-counter products. Pharmacists should strive to provide unbiased evaluations and to correct any misconceptions about the benefits and toxicities of these products in a manner similar to that done for over-the-counter and prescription agents. For the consumer using herbal products, the pharmacist should determine if the patient's herbal therapy is appropriate or if other therapies, conventional or otherwise, would provide better alternatives. The pharmacist should review the patient's drug regimen (including prescription, over-the-counter, and herbal and natural products) and disease states for potential or actual drug-related problems. Allergies should be reviewed carefully, with special caution for those who have plant and pollen allergies. Caution should be taken when little is known about the short-term or long-term effects of any product. Pharmacists need to establish rapport with their patients, maintain regular contact and follow-up, and, most important, encourage the use and continuation of therapies that have been effective.

Combinations of certain herbal products and conventional drugs may cause synergy of similar adverse events or may result in significant drug interactions. Pharmacists play a critical role in educating patients and health care providers about the evidence available regarding efficacy and potential adverse effects, and in making recommendations consistent with that evidence. The pharmacist should provide updates to the health care team on commonly used herbal products and serve as a resource for questions from the team members. The pharmacist also should collaborate with the health care team in conducting research on the use of botanical agents. Staying informed and educating others should be an integral

part of all pharmacists' responsibilities in providing complete pharmaceutical care to patients.

To conclude, it is believed that the pharmacists are active participants in the care of patients who are taking herbal products. Currently, most pharmacists are not educated adequately about herbal products and other types of alternative medicine.

Furthermore, good information about many of these products is not available. These combined factors present a challenge for pharmacists as they seek to provide optimal care and counseling to patients who use herbs or supplements.

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