

The Pros and Cons of Standardization

Anyone who walks into a natural food store looking for an herbal product will be faced with the inevitable dilemma of having to choose between innumerable products in various shapes and forms. This is largely because herbal products are formulated, manufactured and distributed by individuals and companies with a wide variety of backgrounds, philosophies and knowledge (or lack of it) working in a capitalistic system trying to gain a share of the market. Sadly, even the employees of these stores are often unable to unravel the mystery surrounding the relative differences between these products. Their knowledge base is often largely limited to information provided by the companies who manufacture and distribute these products. This information is often just propaganda designed to convince store personnel that their products are in some way, real or imagined, superior to other products of a similar nature.

The latest wave of products that claim market superiority that you will run into sooner or later are those that contain “standardized” or “guaranteed potency” herbs. The concept behind these products is quite simple and seemingly logical. It is based on the belief that all herbs contain one or a few “active constituents”. These are chemicals that are supposedly responsible for the medicinal properties of the plant. Since the properties of all herbs are believed to be dependent on the presence of their active constituent(s), by ensuring that an herbal product contains a consistent minimum amount of it/them, you should be able to guarantee both the quality and potency of the product.

Although this sounds logical, there are a number of fallacies being propagated here. Philosophically, this concept is based on the belief that all of the therapeutic properties of a given herb can be reduced to the activity of one or a few of its chemical constituents. Herbs are composed of thousands of different substances. The therapeutic properties of an herb are the result of a synergistic interaction of *all* of its chemical constituents. The whole is always greater than the sum of its parts. Unfortunately, scientists tend to believe that they can focus on one single factor in nature while “controlling” the rest of the world and make meaningful conclusions about how nature works. Although no-one would deny that useful information has arisen out of this form of inquiry, much of this information is irrelevant because nothing in nature exists in isolation. Fortunately, there is some light at the end of this tunnel. At the “Plants for Food and Medicine” conference that was held in England last year, two of the world's leading researchers of medicinal plants, Dr. Rudi Bauer and Dr. Max Wichtl, both confirmed that researchers have finally begun to compare the medicinal properties of whole herb extracts vs. extracts of chemicals believed to

be the active constituents of the same herbs. In every case the extracts of the whole herb proved to be superior. Dr. Wichtl warned that researchers “should not equate standardization with potency and efficacy”. It’s refreshing to see modern researchers who are capable of recognizing the limitations of the reductionistic model.

Unfortunately, many of the propagators of the standardization myth are not aware of this research and have fallen prey to another reductionistic fallacy: if a little is good, more is better. The result is the increasing presence of herbal products that contain “active constituents” standardized to levels much greater than you can expect to find in nature. For example, it is believed that the properties of ginseng are the result of a group of saponins found in the plant that are collectively known as ginsenosides or panaxosides. It is possible to obtain Asian “ginseng” products that contain 80% ginsenoside. Natural Asian ginseng (*Panax ginseng*) usually contains about 4% ginsenoside. I would argue that it is deceptive to call these products “ginseng” at all. They should be labeled as “ginsenoside”. Thousands of years of empirical experience in various herbal traditions throughout the world has confirmed that increasing the potency of something does not necessarily result in increased efficacy. Some herbs (and herbal constituents) have different properties at different potencies. Many conditions respond better to a gradual, gentler approach than a more potent, invasive approach. In addition, as a constituent becomes increasingly more isolated, it is more likely to be associated with toxicity and potential contraindications.

Another problem with standardized products involves the processes by which they are manufactured. If a manufacturer discovers that a batch of a particular herb contains less of an active constituent than the amount that they have chosen to standardize to, they have a number of options. Firstly, they can either destroy the herb (this rarely happens) or they can sell it as a particular potency when it clearly is not (this sometimes happens). If they choose to bring the herb up to their chosen standard they can either add more of this constituent from a natural, extracted or a synthetic source, or they may concentrate it by removing other constituents of the herb. None of these options is very desirable for obvious reasons. In addition, there is the danger that a company might sell inferior quality herbs by simply adding some of the chosen “active” while other important constituents are seriously deficient. All of these processes require additional stages of manufacturing. Every additional manufacturing step is likely to result in greater degradation of the chemical constituents of the herb. In addition, many of the manufacturing processes involved in manufacturing standardized products require the use of toxic organic solvents (e.g. benzene) as

part of the extraction process. These solvents may be present in trace amounts in the final product.

On the other hand, there are some potential benefits of some kind of standardization. If applied correctly in a limited fashion, testing standards can be very useful for assuring plant identity and, to some extent, quality.

The quality issue is obvious. If a particular constituent of an herb is significantly deficient, it may be an indication of very poor quality herb material. However, it may also be an indication that the herb is actually a different, but related, species. On occasion, you may even come across plant material where a constituent is entirely absent. This could be an indication that it is from another, unrelated species. The implications are obvious. In this case, either by mistake (an indication of poor quality control) or intention (an indication of deception), one species was being sold as another.

No one would disagree that it is important that a species be properly identified. This is of particular concern when different species of the same genus are not properly identified. For example, 95-100% of the burdock root that is available on the market is identified as great burdock (*Arctium lappa*). In reality, a significant proportion of the commercial burdock root is actually common burdock (*A. minus*). There are plenty of other examples: spotted gravelroot (*Eutrochium maculatum*) sold as sweet gravelroot (*E. purpureum*), Maryland figwort (*Scrophularia marilandica*) sold as European figwort (*S. nodosa*), etc.. What these examples have in common is that the properties of each of these pairs of species are virtually identical. However consider the following: common purple coneflower (*Echinacea purpurea*) sold as narrow-leaved purple coneflower (*E. angustifolia*), blue vervain (*Verbena hastata*) sold as European vervain (*V. officinalis*), common scullcap (*Scutellaria galericulata*) sold as mad-dog scullcap (*S. lateriflora*), etc.. In these instances, each of the pairs of herbs has somewhat different properties.

These situations are a lot more common than they should be. In the case of scullcap, I have seen common scullcap misidentified as mad-dog scullcap in bulk herb samples from one of the best suppliers of bulk herbs (one that supposedly does identity testing); seedlings being sold by a very respectable supplier of herb seeds and seedlings; and in a photograph in one of the most popular herb books authored by one of the worlds most respected herbalists. In every case the herb was incorrectly identified as *Scutellaria lateriflora*.

The bottom line here is that standards are necessary and very useful when properly applied. However, in a capitalistic society, what appears to be an improved standard may turn out to be nothing more than a marketing technique. Buyer beware!