

DECONSTRUCTING VARRO TYLER'S HONEST HERBAL

An essay reviewing "*The Honest Herbal*" by Prof. Varro E. Tyler, PhD,
published by Harworth Herbal Press, 3rd Edition, 1993.

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Summary: A critical review of *The Honest Herbal* and sections of *Herbs of Choice* by Prof. Varro Tyler in which the reviewer analyzes the many errors of fact, logic and bias present in these books. Following further evaluation of Tyler's commentaries, the reviewer concludes that *The Honest Herbal* was written from a position of subjective bias against and ignorance of the basic principles and practice of phytotherapy (herbal medicine). The historical and cultural reasons for the misrepresentation of these books as authoritative sources for healthcare professionals and interested lay persons in North America needing accurate information regarding safety, efficacy and administration of herbal medicines are examined. The bibliography of Professor Tyler is discussed from the perspective of the appropriateness of the publishers and others claims of his authority and expertise in the field of clinical use of medicinal herbs.

Keywords: Herbs, Medicinal; Book Review Article.

Deconstructing Varro Tyler's Honest Herbal

Tyler's books claim to present objective scientific evaluations of medicinal herbs, their therapeutic uses, safety and efficacy to interested readers, including medical professionals. This claim is buttressed by the presentation of Tyler himself as a highly qualified authority on the subject and appears to have been successfully promoted with *The Honest Herbal* a best seller in its third edition, and a perennial favourite in the HerbalGram Top Ten herbal book chart. Popular articles reconfirm this image of Tyler and his books on a regular basis - for example *Health Magazine* recently discussing "Alternative approaches to Cancer" (March 1998 p 69) exhorts its readers to:

before using any herb, check a reliable reference such as Varro Tyler's The Honest Herbal.

Tyler in fact has a low opinion of herbal medicine....

you are less likely to receive value for money spent in the field of herbal medicine than in almost any other -Tyler HH p7

A view not shared by the World Health Organisation which endorses the use of traditional medicines as safe and *cost effective* . Nor apparently by the American public whose number of annual visits to obtain treatment with "alternative therapies" has long since overtaken the number of visits to regular primary care physicians in the USA - and at an average cost of less than \$27.00 per visit.

Unconventional Medicine in the United States. Prevalence, Costs and Patterns of Use- Eisenberg D, et al NEJM 1993 Jan 28 328 (4):246-52

Tyler also has a low opinion of herbalists:

To understand plant drugs completely, we need to know their botany, chemistry and pharmacology. Few modern herbalists possess such a comprehensive background.
- Tyler HH p2

In fact, as we shall see below, Tyler considers “modern herbalists” to be a subspecies of countercultural drug peddler, and reviews of Tyler’s books within the professional herbal literature have understandably tended to be brief and dismissive. But the continuing promotion of his books as a benchmark of scientific integrity for the assessment of herbal medicine means that an in depth review from an informed herbalist perspective for readers outside the profession is overdue.

We shall also see that Tyler’s claim to be an authoritative source of objective information about medicinal herbs is lacking in both substance and merit. However, both Tyler and his books have been enlisted to support an ideological view in an emerging discourse concerning the scientific validity of herbal medicine. This view seeks to make herbalism scientifically respectable by portraying it as an ersatz version of reductionist biomedicine, whilst denying its historical, philosophical and practical origins in vitalistic philosophy and empirical therapeutics. These latter are in fact the great strengths of herbal medicine that ultimately underlie its current resurgence. This essay will therefore examine Tyler’s book *The Honest Herbal* with some reference to the later *Herbs of Choice*, and deal with some of the contextual issues in the current debate around the scientific validity of herbal medicine.

The Honest Herbal and *Herbs of Choice* are philosophically and logically flawed, riddled with errors of both omission and commission. They are based on a limited and partial selection of secondary sources and systematically omit coverage of primary studies. In *The Honest Herbal*, conservative opinions replace useful information about therapeutic actions; ominous but unsubstantiated warnings replace accurate data on safety and

toxicity; it contains no useful facts about dosage; misleading polemic and prejudice rather than references and reliable information mean that far from being “honest”, or *objective at all*, the book is quite the opposite - overwhelmingly *subjective*.

In *The Honest Herbal* Tyler employs techniques of tabloid journalism such as denigration by association and innuendo. He selectively quotes dubious and dated sources like old *High Times* articles and obscure, out of print 1970's “counterculture” books on recreational drugs, which are portrayed as representing what “modern herbalists” practice and promote. The agenda is presumably one of discrediting herbal practitioners, who by implication are half witted yet potentially dangerous drug pushers. A typical example of this “druggie” smear tactic is shown in this passage on *Cytisus scoparius* ...

*A counterculture publication recommends....the moldy dried blossoms are then pulverised and rolled in a cigarette paper and smoked like marihuana. One such cigarette is said to produce a feeling of relaxation and euphoria lasting about two hours. But the greatest potential danger in smoking moldy broom flowers probably lies not in the flowers, but in the fungus infecting them. Studies have shown that almost all samples of illegally obtained marihuana tested were contaminated with pathogenic inhalable **Aspergillus** species.....Broom flowers purposely allowed to become moldy would almost certainly be similarly contaminated with such pathogenic organisms and would thus present an appreciable risk to the user.*
-Tyler HH p 59

It is unclear why these concerns should comprise the major part of a discussion about a herb that is used in modern phytotherapy to treat cardiac arrhythmias (a pharmacological effect to which Tyler devotes only one line followed by the incorrect comment that it is no longer used for that purpose). This “recreational drug” innuendo is repeatedly used, it being unclear whether the herb, herbalists, or some version of “counterculture” is the target...

HOPS

Hops are closely related to marihuana and some writers advocate smoking the plant material to obtain a mild euphoria - Tyler HH p176

LOBELIA

Members of the counterculture smoke Lobelia to obtain a mild legal “high”, analogous to that produced by smoking marihuana . - Tyler HH p206

Stretching to include *Hydrangea* in his list of marijuana substitutes requires Tyler to refer to both to the incorrect species as well as the wrong plant part (the medicinal species is *H. arborescens* and the part used for herbal medicine is the root bark).

HYDRANGEA

Hydrangea paniculata v *grandiflora* (a garden cultivar) leaves have been smoked in a fashion analogous to marihuana to produce a kind of euphoria or high
- Tyler HH p181 (underlining by JT)

When *The Honest Herbal* was first published in 1982, herbal medicine was far less established in the US than it is even today. In the 1970's herbs and herbalism were certainly minority interests, and to some extent associated with people adopting “alternative” lifestyles. Tyler's prejudices are commensurate with the propagandistic backlash of Congress against decriminalisation of marihuana (which had actually been proposed by Nixon's Drug commission in the 1970's) and they may at least be historically understandable in that context. Attempts to banalise the “hippie” movement of the sixties invariably miss the point, and in any event those *High Times* readers and graduates of the “Leary School” are now more likely to be found at ethnobotany conferences, giving scholarly papers (or writing books) on ethnopharmacology and ethnobotany. In comparison, *The Honest Herbal's* dated anti-drug propagandising betrays a lack of academic rigour that would now be unacceptable in an undergraduate essay. Tyler may once have considered himself a knight saviour protecting the naive consumer from drug-pushing herbalists, but as the slick marketers of the OTC supplement industry move into top gear for the next century, his script reads more like the archaic ramblings of a Don Quixote, tilting against fantasy

windmills. Neither Tyler nor his publishers appear to have taken advantage of the opportunity of later editions of *The Honest Herbal* to correct these embarrassing tirades.

A related tactic in *The Honest Herbal* is to ridicule a herb, by emphasising some incidental non medicinal aspects about it:

MYRICA

Since the root bark has no proven medicinal value anyway, it seems best to restrict the use of the plant to its berries, whose wax does make nice smelling candles.

-Tyler HH p42

Traditional or folk uses that have not been confirmed by studies also come in for ridicule, rather than a simple observation or comment that they remain to date unsupported by available research....

BORAGE

Borage no more stimulates real courage than the potion in the square green bottle which the Wizard fed to the cowardly Lion in the Wizard of Oz...-Tyler HH p52

A little circumspection might be more appropriate here as modern research has more often than not confirmed traditional usage of medicinal herbs. Despite the inaccuracies which litter *The Honest Herbal* Tyler seems immune to embarrassment. His opinions are not only contrary to widely accepted facts of traditional usage and contemporary therapeutics, but also to published research. Dismissal of empirical clinical results and historical usage may be a predictable part of Tyler's criteria of being "scientific". His disregard of the relevant primary pharmacological and clinical studies, as well as the lack of familiarity with or reference to respected authors in western medical herbal science or to commentators known for extensive reviews and surveys of the technical literature is incomprehensible and inevitably leads him to make repeated false claims and draw erroneous conclusions.

Some typical examples from *The Honest Herbal* follow...

TARAXACUM

In summary no significant benefits should be expected from the use of any Dandelion products. - Tyler HH p110

[Dandelion root heads the list of excellent medicinal foods for the liver, and related organs and glands, This high position is supported by the available research. - Daniel Mowbrey PhD, *Scientific Validation of Herbal medicine* ; Fluid extracts have been shown to have a diuretic and saluretic effect equal to that of furosemide - Prof. Max Wichtl PhD - *Herbal Drugs and Phytopharmaceuticals* ; Dandelion root is effective in restoration of hepatic and biliary function, dyspepsia and loss of appetite - ESCOP Monographs *Taraxacum radix*, 1996)

CIMICIFUGA

Although black cohosh does appear to exert some physiological effects, none of them have been clinically verified in human beings. - Tyler HH p46

[Numerous clinical trials in Germany have attested to the efficacy of Cimicifuga for menopausal complaints - Dr Ruth Trickey, *Women, Hormones and The Menstrual Cycle*, Allen Unwin 1998]

GINSENG

Unfortunately Ginseng remains an enigma with no proven efficacy for human beings. - Tyler HH p158

[To cover all the data on Ginseng would require at least one book...several European clinical studies have produced interesting results , among them a shortening of reaction time to visual and auditory stimuli, increased respiratory output, increased alertness and power of concentration, a better grasp of abstract concepts, and increases in visual and motor co-ordination. Steven Foster & Yue Chongxi - *Herbal Emissaries* 1992; Clinical studies have demonstrated : therapeutic effects against antineoplastic medicine side effects, particularly normalisation of leukopenia; lowering of blood sugar in diabetics, lowering of HDL cholesterol, improvement in post surgical recovery, elimination of menopausal symptoms, increase in sperm production extracted from Kerry Bone - *Clinical Applications of Ayurvedic and Chinese Herbs*, 1996]

DONG QUAI

There is little reason to utilise it as a therapeutic agent. - Tyler HH p113

[Various herbal preparations such as Siberian Ginseng, Dong Quai, Black Cohosh and Wild Yam have helped many women with menopausal and other symptoms - Dr Christiane Northrup , *Women's Bodies Women's Wisdom*, Bantam 1994]

The later work *Herbs of Choice* is marginally less opinionated than *The Honest Herbal*.

Here Tyler expounds his philosophical views (in a chapter entitled 'Basic Principles').

This 'mission statement' is useful because it spells out both Tyler's agenda and the foundation of his arguments upon logical inaccuracies.

Consider for example the following logical fallacy...

All cats have hair
All dogs have hair
Therefore all cats are dogs

This is of course absurd - obviously all cats are not dogs. The fallacy is that two objects are held identical because they share some characteristics in common. Tyler employs this fallacy in the form...

All plants contain chemical compounds
All drugs are chemical compounds
Therefore all plants are drugs

For Professor Tyler, cats are dogs and plants are drugs. Plant remedies are thus removed from the messy realm of herbalists, herbal science and phytotherapy and made the object of pure scientific pharmacological understanding by redefining them as single active drug compounds. Ironically Tyler proclaims that he believes *he* is the one who has uncovered a fallacy precisely as he falls prey to this one

*...the dogma that whole drugs, that is leaves or roots or seeds or the like - have physiological properties different from the active constituents isolated from the same plant parts. **This is of course a fallacy.**herbs and other drugs exhibit the same activity as the active principles isolated from them - Tyler HH p3*

Tyler supports this argument with the predictable example of *Digitalis*. (Foxglove) One really sometimes wishes that Withering had never published his treatment of dropsy with the plant. *Digitalis* is just the perfect example, paraded like a super model on the catwalk, familiar but never accessible, the star of every show, from pharmacology text books to popular paperbacks on herbal medicine; quoted by all, used by none. *Digitalis* is arguably unique amongst plant remedies - in that it is a single plant remedy entirely capable of restoring weakened organic function of the failing heart to normal - an indication that may be narrow yet one of tremendous importance. This uniqueness is however an exception, and one that proves no rule.

Foxglove leaf and purified digitoxin do indeed have similar cardiac actions. Ergo says Tyler, plants are drugs. This argument is false on two counts. Firstly, while the two are very similar in terms of pharmacodynamics, there are significant differences in terms of pharmacokinetics. This may be of little interest to a pharmacognocist but to a clinician it is crucial. Both *D. purpurea* and *D. lanata* contain a complex mixture of cardiac glycosides, each of which has small variations in molecular structure which confer different properties on the compound. The pharmacokinetics of different combinations of different glycosides will determine whether a particular preparation is most suitable for tachycardic or bradycardic arrhythmias, for advanced or moderate decompensation in congestive heart failure and so on. Tyler incorrectly suggests that all cardiac glycosides are equally toxic, and lists a number of plants that contain them (incorrectly including *Selinicereus grandiflorus* in his list, a plant whose cardiac activity depends on alkaloids not cardiac glycosides). However the differences in pharmacokinetics, especially in absorption and renal clearance, mean that in practice various cardiac glycoside containing plants such as *Convallaria* (Lily of the Valley) have a fraction of the cumulative toxicity of digitalis or strophanthin. Weiss calls these plants “digitaloid” -

precisely because they are safe for use in mild to moderate congestive heart failure.

Convallaria remains a mainstay of modern phyto-therapeutic treatment of heart failure despite the “toxicity” of convallotoxin.

Secondly, and more importantly there is a perfectly valid distinction made in herbal medicine by herbalists of all persuasions between strong - *drug like* - herbs, and the majority of medicinal plants which are intermediate or milder acting herbs. As Rudolf Weiss MD, (one of the founding figures of modern German phytotherapy, a clinician with decades of experience and a long time university chair holder in herbal medicine) writes in his book ***Herbal Medicine***;

Phytotherapy covers everything from medicinal plants with powerful actions, such as Digitalis and Belladonna, to those with very gentle action , such as chamomile, mint and many others....Gentle action...does not mean they are more or less ineffective, but rather that one would not expect these plants to produce instant and powerful effects like those seen after an injection of digitalis or strophanthin. ..Gentle action also means that as a rule these plants do not have any appreciable toxic effects and may therefore be safely taken over an extended period of time. Weiss - Herbal Medicine p 1

In other words, powerful *drug like* plants such as *Digitalis* do indeed have physiological actions dominated by one or two active chemical constituents, but these are an exceptional and small minority of herbal medicines, most of which fall into the gentle or intermediate categories. In these cases, contrary to Tyler’s assertion, the whole herb cannot be reduced to an active principle with defined drug like activity... again as Weiss says:

It is nevertheless true, with most gentle phytopharmaceuticals, that there is no standardised active principle that solely or largely determines the drug action...the gentle phytopharmaceuticals demonstrate in particular that with plant remedies one very often has a comprehensive complex of active principles, with individual components interacting with others, so that only the complex as a whole will produce the therapeutic action. - Weiss - Herbal Medicine p1

Or as South West herbalist Michael Moore puts it with characteristic clarity :

The active principle is the whole plant

Herbalists have long viewed the multiple constituents of whole plant preparations as having synergistic properties that exceed the sum of the single constituents. In clinical practice real herbal prescriptions, whether time honoured elixirs or modern phytotherapeutic formulae are often compounded from many herbs, each with its innumerable active constituents, taking us into a world of polypharmaceutical complexity that is even further removed from the reductionist single constituent drug model of herb action. Tyler once again disregards both the empirical facts and the scientific evidence:

(False tenet 3 of paraherbalism is that) ...whole herbs are more effective than their isolated constituents - Tyler HC p8

[While the geranial and neral components individually elicit antibacterial action on gram-negative and gram-positive organisms, the third component myrcene did not show antibacterial activity on its own. However myrcene provided enhanced activities when mixed with either of the other two main constituents. J Ethnopharm. 12, 279-286,1984]

Combined formulations of herbs in fact can increase both activity ...

[...moreover a mixture of these extracts at 200mg/Kg was more active than the plants administered separately; this indicates that both plants may act in synergy. J Ethnopharm,16,105-11,1986]

and bioavailability:

[Piper longum increased the blood levels of vasicine by nearly 233%...The results suggest that the Trikatu drugs (Long Pepper, Black pepper and Ginger) increase bioavailability either by promoting rapid absorption from the gastro-intestinal tract, or by protecting the drug form being metabolised in the first pass through the liver, or by a combination of these effects... J Ethnopharm.,4, 229-32, 1981]

This ignorance still exists today: there is no difference in Vitamin C for example obtained from natural biosynthetic processes in rose hips or by synthetic processes in the laboratory of a chemical manufacturer. -Tyler HH p5

[Ascorbate in the citrus extract was found to be more bioavailable than ascorbic acid alone in human subjects. - American Journal of Clinical Nutrition, 48, 601-4, 1988]

For Tyler however, neither logic, studies, nor the viewpoint of phytotherapy are relevant. His insistence that plants are drugs (or as he also calls them “diluted drugs” referring to nature’s tiresome intrusion of supposedly inert ballast of other constituents) is doubly ironic in view of his preoccupation with attacking “New Age-ism” and its alleged influence on “paraherbalism”. Tyler does not see that his saying something is so, purely because *he* believes it to be so, implies that psychology determines reality - a viewpoint quite compatible with “New Age-ism”. Ignoring the historical and philosophical bases of scientific knowledge, Tyler demonstrates the purely religious view of science as objective truth shared by that dwindling number of scientists unaware of the theory-laden and relativistic nature of “facts”. The ‘mission statement’ in *Herbs of Choice* attempts to distinguish the scientifically valid use of medicinal herbs which he calls “*rational herbal medicine*”.... from what he dubs “*paraherbalism*” (that is Tyler’s parody of herbalism as practised by professional herbalists) which involves adherence to a range of deviancies including irrational belief in the superiority of natural medicines, eating organic produce, reading Culpeper, opposition to animal experimentation, promoting consumption of poisonous herbs, recreational drug abuse etc. Tyler declares...

Rational herbal medicine IS conventional medicine. *It is merely the application of diluted drugs to the prevention and cure of disease - Tyler HC p10 emphasis Tyler’s*

At last, everything is solved ! Herbal medicine is nothing other than conventional medicine!

Tyler's logical errors also include circular reasoning. Having defined the activity of medicinal herbs as dependent on the presence of an active constituent, active constituents in turn being defined by scientific study, it necessarily follows for Tyler that herbs lacking studies are inactive and cannot be recommended by him. Repeatedly, *The Honest Herbal* defines herbs with empirically established therapeutic efficacy as inactive because research into their activity is lacking. The book lists 108 herbs in its summary tables. Less than half (49 herbs) are classified by Tyler as having "apparent efficacy", while a mere one third, (35 herbs) are considered to be both "probably safe" and "apparently effective." It has already been pointed out that since Tyler does not generally attempt to review the primary research in the first place, he inevitably dismisses a number of herbs with positive pharmacological and clinical studies. But Tyler also dismisses herbs for which he acknowledges positive studies do exist: in these cases he hedges by saying that a few positive studies are **not sufficient** cause for recommending the herb.... the goal posts are simply moved when they get in the way ...

It must be emphasised that these claims are based on studies carried out primarily on small animals or on small numbers of human subjects. Extensive clinical studies in human beings are required to verify these findings before the herb (Bilberry) can be recommended for these purposes. - Tyler HC p54

Tyler is not alone in this use of circular reasoning about scientific studies as the validation of medicinal herb activity. It is actually one of the causes of the current emergence of a "super-league" of around a dozen herbs that have gained general acceptance because of the research into their pharmacology and clinical effectiveness (Echinacea, Garlic, Hawthorn, St John's Wort etc). The more research is published, the more that herb is accepted. By positive feedback, the "studied" herbs become progressively more established, while at the same time the lesser known plants in the materia medica become progressively ignored.

Of course, such circular reasoning is absurd. Garlic and Hawthorn and other “super league” herbs were Garlic and Hawthorn prior to any pharmacologist researching them or journal publishing studies. Their therapeutic actions were established before any constituent was identified or standardised product became available. It was precisely the empirical knowledge of their traditional use that led anyone to “study” them in the first place. And the hundreds of other medicinal herbs in the materia medica remain as effective as they always have been despite any lack of studies. Not only is it logically absurd to believe that a study makes a herb active, but there is here a crucial point in the whole debate about the scientific basis of herbal medicine. Of course herbalists value constituent studies, but it is also true that *the presence of constituent “studies” almost never significantly changes the way a medicinal plant is used therapeutically.* There are a few interesting exceptions to this, but much as one cannot discuss the strange case of the hyena with someone who believes all cats are dogs, one cannot begin to grasp the rich diversity of herbal remedies if their nature is essentially defined by the pharmacology of their constituents.

A related misconception that also flows from the view that plants are drugs is the erroneous belief that "standardisation" somehow guarantees "quality" of a herb product. Standardised extracts involve the selection of one or more 'active' or 'marker' compounds which may then be assayed and if necessary manipulated in the production process to meet a minimum titre - usually stated as a percentage of that compound (or class of compounds). There are various problems associated with standardisation, both technical and theoretical as well as clinical, and by an large the issues are too complex to discuss here in detail. However, since the vast majority of herbs do not have single active principles, the concentration of a compound that is selected for standardising an

extract guarantees precisely nothing - other than the presence of that amount of that compound in the product, and probably a degree of degradation in the manufacture of the product as well. Standardised herbals are yet one step further from the original plant.

For a current example that neatly expresses some of the problems, consider Hypericum. By convention St John's Wort is commercially standardised to no less than 0.3% of the chemical compound hypericin. Hypericin is demonstrably NOT responsible for the antidepressant effects for which this herb is currently so popular (administering isolated hypericin to depressed patients does not improve their condition). Recent research suggests that another compound - Hyperforin - is more the most likely a candidate for the active anti-depressant principle. And this says nothing about the compounds responsible for the many other actions of St John's Wort, which is far more than a "herbal anti-depressant". Yet intelligent consumers concerned about health and diet, (who may have long ago switched from Wonderbread to artisan baked organic whole grain loaves) will insist on ingesting Hypericum pills standardised to hypericin, despite their Wonder bread character, (ie that they are industrially processed products that need constituents adding back to compensate for the degradation involved in their manufacture). And to cap it all hypericin is not even the active anti-depressant principle!

The idea that standardisation per se can guarantee quality is a myth, albeit an attractive one in a culture where the confusion of quantity with quality is commonplace. The marketing hype spread by some well known US herbal product companies that standardised extracts are "safer" and more effective", is not only untrue, it is unproven, and the weight of evidence would tend to suggest that the opposite is more probably

the case. There are several instances where reports of side effects of herbs coincided with their standardised extracts (as opposed to traditional galenic tinctures) becoming commonly available - for example Ginkgo and orbital headaches. Claims for the clinical superiority of standardised products are unethical commercial attempts to dupe the public in the name of science. The starting quality of the herbal material used in the extraction process is far more relevant to quality of the final product than any laboratory manipulation or "correction" during manufacture. Most companies offering standardised product start with crude herb purchased by third party brokers in the international marketplace - the provenance and quality of which is inevitably beyond their direct control. The old adage, garbage-in-garbage-out is pertinent. Alas, Tyler has in recent months lent his name and personal endorsement to precisely such claims on prominent product literature.

The concerned physician or informed consumer might ask well how then can quality of a herbal product be guaranteed if standardisation does not assure reliable quality? The answer is - know the herb. The reductionist drug paradigm does not apply. Once more

Weiss puts it well:

In the first place it is important that physicians once again develop a special, almost 'personal' relationship to the medicinal plants they prescribe, very much as it was in the past.....

....Another aspect is that physicians should be able to make up their own formulations, plant drugs being particularly suitable for this. Finally the aim must be to link every proprietary product and every formulation with a definite concept of the plant on which it is based, not only as regards its actions, but also its appearance and the parts used, whether leaf, flower, root and so on. Where a chemical product has its structural formula, the medicinal plant has a specific image, and knowledge is required of the plant drug and its uses.

- Weiss, Herbal Medicine p6-7

Safety and toxicity issues are major concerns in the use of herbal medicines, and a significant reason why healthcare professionals and educated lay readers need reliable

sources of information. Tyler does not review safety and toxicity studies, does not present information on potential herb-drug interactions, and does not give reliable information on safe dose ranges or distinguish between therapeutic and toxic doses. Tyler classes only 57 of the 108 herbs covered in *The Honest Herbal* as being only “probably safe”, several common herbs are suggested to be dangerous and possibly life threatening in excess. For example, Tyler subscribes to the traditional but discredited bad press given to herbs such as Licorice and Lobelia.

Consider the logic of this analysis of the “toxicity” of Licorice from *The Honest Herbal*... Firstly Tyler points out that Licorice candy contains no Licorice, but is flavoured with aniseed. Then he warns that excessive consumption of Licorice candy causes terrible side effects. Following this we are given a case history (note that physicians’ reports of single cases are always called *case histories*, while herbalists’ reports of single cases are dismissed as *anecdotal evidence*) of Licorice toxicity requiring hospitalisation - an elderly man chewed 36 ounces of tobacco (not candy) daily, swallowing it all. The tobacco was flavoured with 8% solid extract of Licorice (equivalent to a daily dose of around 85 grams of whole Licorice root) And thus concludes Tyler, Licorice root, used by hundreds of thousands of people world wide on a daily basis, is a herb toxic enough to be considered life threatening - it will allegedly even cause cardiac arrest (although that did not happen in the tobacco case and the only supporting ‘citation’ of this fatality is an anonymous letter, un-confirmed in the literature).

This progression of self contradictory statements unravels when we understand that there is not one single report of toxicity or side effect in the medical literature arising from the oral ingestion of whole Licorice root extract as used in herbal medicine. Every single medical report of side effects attributed to Licorice root come from abuse of

industrially processed extracts, flavorings and additives in food, candy, tobacco products, never the form used in herbal medicine. The side effects from industrial products using Licorice concentrates are real, but have nothing to do with the medicinal herb taken in therapeutic doses. Nowhere in his Licorice “monograph” does Tyler cover the use of Licorice root by orthodox medicine to successfully treat Addison’s Disease in the 1950’s prior to the development of cortisol therapy, let alone the substantial volume of contemporary research confirming the hepatoprotective, anti viral, anti inflammatory, expectorant and anti-ulcer activity of Licorice root by in vitro, in vivo and clinical trial studies. Instead we are simply told that Licorice

...does have a flavor pleasing to many, and may have some utility in treating coughs as well as a number of other conditions (not specified) but it must be remembered that it is a potent drug, large doses over extended periods of time are quite toxic.”

-Tyler HH p199

Nor are we informed what either the toxic or normal therapeutic dose of Licorice root may be. (The normal dose range is 1-4 grams of dried root three times daily: adverse effects such as “pseudoaldosteronism” are only reached at levels of 400mg of the pure constituent glycyrrhizin per day, a level well in excess of the normal dose range of whole root which supplies around 100-150mg per day. Some individuals however have idiosyncratic sensitivity to Licorice root and may be sensitive to lower doses. Cardiac and renally compromised patients should use Licorice only under supervision).

The same omission of detail on therapeutic and toxic dose data applies throughout *The Honest Herbal* for all the herbs covered, as do the frequent assertions of life threatening toxicity. For example, Lobelia, having already been ‘rubbished’ as a marijuana substitute is said, in excess, to result in a host of undesirable side effects including

..sweating, rapid heart beat, low blood pressure, even coma, followed by death. Large doses may cause convulsions. -Tyler HH p205

The reference here is to a secondary source - Martindales 1977 edition. The case referred to there was reported in the BMJ in 1968 and in fact involved a middle aged asthma patient who was concurrently medicating with a sympathomimetic inhaler (orcipranaline sulphate) and who also smoked *Datura stramonium* leaves (containing the powerful anti-cholinergic hyoscyamine and hyoscine) mixed with Lobelia. She had previously been taking the smoking mixture for twenty years, and collapsed after taking two prescription drug inhalations followed by smoking the mix for five to ten minutes. Lobelia, a very mild alpha-adrenergic agonist, is the least culpable element of this cocktail - and the case was dropped from later editions of Martindales monograph on Lobelia. As a lesson in herb drug interaction it of course remains relevant. Paul Bergner, Editor of the journal *Medical Herbalism* concludes in his exhaustive survey of the origins of the Lobelia toxicity myth:

Despite the widespread use of large doses of lobelia in domestic medicine for much of the nineteenth century, there is no primary reference in the medical literature showing harm to any individual from the use of this plant. Secondary references occur to several politically- charged court trials of herbal practitioners in North America and London (the North American practitioner was acquitted) but no medical case report can be located listing any fatality or major injury by lobelia, with details such as the course or treatment or the toxic dose. In fact, the supposed toxic dose in the court trials is identical with the dose that was recommended for asthma in the U.S. Pharmacopoeia from 1820 until 1920, and lobelia tincture and several other lobelia products were sold without warnings of toxicity by the Eli Lilly pharmaceutical company as late as 1941. - Bergner, pers comm. 1998.

The combination of lack of information and misinformation in *The Honest Herbal* is quite incomprehensible in a book purporting to inform its readers, but the irrational polemics against empirical and traditional use that replace them emphasise for once and for all the philosophical divide between Tyler and the science of herbal medicine. The latter

recognises the rich profundity of its historical origins, the validity of the individual patient's experience, as well as the contribution of scientific research and clinical trials where available. (It is of course well known that the great majority of the daily practice of orthodox medicine is itself unsupported by rigorous standards such as positive double blinded placebo controlled clinical trials). It is worth quoting once more from Rudolf Weiss's text *Herbal Medicine*. Here Weiss presents and comments on Vogel's views regarding clinical studies...

Whilst it was necessary to investigate the efficacy of plant drugs with the methods of scientific medicine, we should also not forget the following:

'Demonstrations of medicinal actions should not be based on rigid schemes, but be in accord with the characteristic mode of action of the drug concerned.. Where methods based on exact science are not yet available, medical observation and experience, including the subjective statements of the patient, have to be given equal validity with controlled clinical trials.' The basic stance of rational therapy is untenable because it rests exclusively on the principles of materialistic thought. *'Applied to the problems of medicine and pharmacotherapy this means: man being a complementary being of body and soul, the subjective statements of the patient concerning drug actions are just as valid as laboratory parameters. Instead of double blind trials, it might be better to adhere to the rule attributed to Abraham Lincoln - you can fool all of the people some of the time, and some of the people all of the time, but you cannot fool all of the people all of the time.*

Applied to pharmacotherapy, this means that when a drug has been used for a long time, is demanded by patients and prescribed by doctors, its action has to be considered established, even without double blind clinical trials.

- Weiss - Herbal Medicine p 5

In sharp contrast to the above, Tyler's "explanation" of the widespread popular use of herbal remedies isthe placebo effect:

At this point you may ask, "If so many herbal remedies have little or no value or may even be dangerous to a person's health why have they become so very popular in recent years? Why do so many people ,especially those who are unusually health conscious, continue to demand and use them?" The answer lies, at least partly, in the placebo effect. - Tyler HH p6

Millions of people are involved in a daily collective fantasy that the herbs they are taking are making them feel better. For Tyler, placebo is merely a psychological

distortion of reality not an intrinsic element of the healing reflex. He believes its value is to discredit false therapeutic claims and poorly designed experiments. For example Tyler says he feels no need to discuss herbs used in homeopathy because

the best that can be said about this now discredited treatment is that it demonstrates the therapeutic value of the placebo effect. - Tyler HH p7

Homeopaths have of course for decades been the object of ridicule by those who have no understanding of their subject. Tyler incorrectly defines homeopathy as the use of very small doses of drugs, too small to possibly have any material effect (ie. diluted below Avogadro's Number). Small doses are not the distinguishing feature of homeopathy, which is uniquely characterised by the principle of the similitum. (Treating like with like) More disturbing however is that Tyler (a pharmacist) apparently ignores one of the basic pharmacokinetic characteristics of drug action - the biphasic dose-response curve. There are many drugs and natural compounds such as most prostaglandins say, whose action in the body varies biphasically with dose (ie there is a bell curve of activity against dose - at a certain point activity increases as dose decreases). For Tyler however....

False tenet 6 of paraherbalism is the belief that reducing the dose of a medicine increases its therapeutic activity - Tyler HC p8

Finally, one might add that the noted German phytopharmacists Bauer and Wagner in their survey of the efficacy of a range of proprietary Echinacea products from Germany actually found that several homeopathic Echinacea preparations were among the clinically active products.

What then explains the apparent popularity of *The Honest Herbal* ? Tyler is presented as an "expert" , and this expert reputation appears to be a keystone of his credibility. It is

necessary to conclude with a scrutiny of the basis of this claim of expertise. Although now retired, Tyler is usually described as the Lilly Distinguished Professor of Pharmacognosy at Purdue University. Purdue perhaps confers the title *Distinguished* upon the incumbent because meaningful recognition is otherwise improbable in pharmacognosy. Nobel prizes are not usually awarded in this field; pharmacognosy is a poor relation to the more glamorous sciences of nuclear physics, neurobiology, molecular genetics and the like. More to the point, modern pharmacognosy has long since lost its primary contact with the plants and is nowadays mainly concerned with reviewing and compiling natural product chemistry literature. Pharmacognocists today are more connected to the Internet than to herbs. Tyler in fact earned his living primarily as a career academic and administrator; he was Dean of the School of Pharmacy at Purdue, and later was Vice President of academic affairs for the whole university. His reputation in pharmacognosy is not based on any notable contribution to that field such as NAPRALERT - the well known database of Prof. Norman Farnsworth at Illinois or the NSDA databases of Dr Jim Duke, but rather his authority appears to rest upon the writings in his apparently extensive publication list.

Out of the more than two hundred and fifty “scientific articles” in Tyler’s official bibliography (obtained by the author from Purdue), scrutiny reveals that the bulk of them are in fact general tracts on pharmacy education, miscellaneous biographical stories, and articles on the history of pharmacy. The remainder are a medley of popular magazine articles with titles like “*Hazards of Herbal Medicine*”, “*False Tenets of Paraherbalism*”, and various book reviews. The two popular books covered here and a co-authored textbook on pharmacognosy are included. Foreign language editions, reprints and updates of these books as well as miscellaneous Deans’ addresses and Annual Reports from the School of Pharmacy are all added to pad out the total

“publication count” - as are several articles on stamp collecting (Tyler is apparently also an expert in philately - particularly on the exposure of stamp forgeries and fakes). Tyler’s original published scientific research work is sparse, consisting of a few co-authored papers in the 50’s and 60’s on amanita, claviceps, psilocybin and ergot alkaloids. None of it is other than routine lab work - verifying constituents of various species and so on. A MEDLINE search on Tyler over a thirty year period reveals a grand total of 24 citations, of which more than half are general educational articles not original research papers.

Tyler, a pharmacist from the 1940’s, is not a medical doctor. He had no training in herbal medicine and is lacking in clinical experience either with herbs or as a physician. His original research in natural product chemistry was minimal in volume and consequence. His publications are largely secondary and journalistic. The bulk of his career was as an academic administrator. His “expert” status evaporates under scrutiny.

Tyler scoffs in his books at proponents of “organic” certification, and implies that consumers are stupid for preferring “natural” remedies or products free of animal testing, or pesticides. He repeatedly makes erroneous and unsubstantiated claims about herbs and their safety, and grotesquely misrepresents herbal medicine and its practitioners. Professional herbalists around the world have long found it hard to tolerate Tyler, yet paradoxically his books are consistently used as reference texts by physicians, pharmacists and journalists interested in the study of herbs in North America.

Part of the explanation is perhaps that Tyler has in recent years been adopted by the domestic US herb industry and its commentators who, in the absence of a licensed and

regulated profession or established science of herbal medicine in that country, need an aura of scientific respectability to promote their own credibility and that of their products. In a climate of regulatory and legal flux about the status of herbs and herbal medicine, the debate on the scientific validity of herbal medicine is being prosecuted by a number of vested interests. From the perspective of today's multi million dollar OTC supplements market, herbal medicine as such remains a marginal issue, both economically and culturally. Corporate priorities are in the retail market, and the product companies need regulation and legislation that maintain their market share. This is the real context of the current debate about the scientific validity of herbal medicine. A bevy of popular magazines, their journalists and publishers have also discovered a lucrative niche for themselves in servicing the public appetite for information on herbs and natural healing.

The US authorities (FDA, NIH, ATF, CDC etc.) employ lab oriented natural product chemists, and since Tyler at least originated from that quarter he is an ideal figure of respectability for the herb product industry. In a sense this is ironic; Tyler is probably regarded as irredeemably left field by his scientific peers and irredeemably conservative by herbalists. But his continued claim to be a legitimate spokesperson for the contemporary natural product industry would hardly be credible if it rested solely upon *The Honest Herbal* and *Herbs of Choice*. Thus more recently Tyler's image has become spruced up by associating his name with the publication of various texts from German phytotherapy, notably the German Commission E Monographs.

The herbal *Monograph* is quite different from a true Herbal. For centuries Herbals explored the "vertewes" of medicinal plants - a direct transmission of the knowledge accumulated and compiled by accomplished and experienced practitioners intimate

with the plants whose use they recorded - hence *Gerard's Herbal*, *Culpeper's Herbal* etc. The Monograph is a historically recent artefact. It arose as a political tool in debates about the legal and regulatory status of herbs (as medicines, as dietary supplements, as drugs, as foods etc). The information published in Monographs is agreed by committee and inevitably legitimates the views of the parties (and their lawyers) interested in their publication (whilst usually purporting to be "objective" or "scientific" in the narrowest sense as a means of disclaiming their interest). The now defunct German Commission E, (it ceased to exist in 1994) was part of the German Federal Health Service. Its Monographs define the scope of government permitted use of the herbs in Germany in accordance with legal medical practices in that country. (The much promoted Commission E Monographs actually originate from the seventies, are dated, unreferenced, and often refer to commercial preparations available only in Germany . They are conservative, telegraphically short, completely lacking any detail in botany, ethnobotany or pharmacognosy. They have the minor benefit of considering some traditional usage but they mostly reflect the specific situation in Germany - where for example injectable herbal preparations are commonly available). Tyler began to associate himself with the Commission E Monographs in *Herbs of Choice*, and he has written a forward to the English translation of these Monographs. This minor publishing event has been promoted as a new dawn in the scientific validation of herbal medicine - or in terms of Tyler's crusade, the "*returning of herbal medicine to the mainstream*". Tyler is a Trustee of the publishers of The Commission E translation - The American Botanical Council. The ABC promote the Commission E translation through their journal *HerbalGram* - the book was ironically top of their best seller list for over a year without it ever having been printed.

Parenthetically it should be noted that a coherent contribution to this whole debate from professional herbalists in the US unfortunately is notably absent, although somewhat confusingly, a co-operative project The American Herbal Pharmacopoeia is producing yet another series of Herbal Monographs. Tyler however has been successful at creating and occupying a niche all of his own, and like most survivors, has adapted to changing times. Tyler's own books do not deliver reliable or accurate information for those who need to know about medicinal herbs and how to use them, nor will the Commission E Monographs solve the problem.

Fortunately, there are authors with bona fide qualifications, who are scientifically and medically literate and who speak from the genuine authority of extensive clinical experience with medicinal plants. Obvious inclusions would be practitioners from countries with established professions of medical herbalism and phytotherapy, such as the German MD Rudolf Fritz Weiss, author of *Herbal Medicine* quoted extensively in this essay, or respected phytotherapists Simon Mills and Kerry Bone, authors of *Principles and Practice of Phytotherapy*.

The wheel of herbal medicine centres around the plants and patients who need them. Tyler enlightens us about neither.

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