

Herbal Medicine

Rudolf Fritz Weiss
MD

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by A. R. Meuss, FIL, MITI

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Chapter 1

What is Herbal Medicine?

Herbal medicine, or phytotherapy, is the science of using herbal remedies to treat the sick. It therefore 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. It should be noted that 'very gentle' action, when referring to chamomile or mint, 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, for instance, after an injection of digitalis or strophanthin. 'Gentle' action also means that these 'simple' medicinal plants do not as a rule have any appreciable toxic effects, and may therefore be safely taken over an extended period of time.

Gentle and Powerful Phytopharmaceuticals

A clear distinction exists between gentle or *mite* phytopharmaceuticals on the one hand, and powerful or *forte* phytopharmaceuticals on the other. Between them lies a wide transitional field, i.e. the many medicinal plants with actions somewhere between 'gentle' and 'powerful' - Liquiritia, Arnica and Khella, to mention just a few. These might also be referred to as 'intermediate' phytopharmaceuticals.

The situation is the same for phytotherapeutic agents as it is for chemotherapeutic ones. With these we have a similarly wide spectrum from gentle and largely non-toxic drugs such as calcium carbonate, or even aspirin, to the modern cytostatics with their

very powerful actions. Here too the majority of drugs are in the middle. Like everywhere else, life swings between two poles.

It is wrong, or at least one-sided, to think only of gentle phytopharmaceuticals when speaking of phytopharmaceuticals, and to belittle them, if not in words, then at least in one's thoughts. It is nevertheless true, with most gentle phytopharmaceuticals, that there is no standardized active principle that solely or largely determines the drug action. The gentle pharmaceuticals in particular demonstrate 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. One might speak of a *bio-pharmaceutical*. The diagram overleaf will help to illustrate this.

Where Did the Term Phytotherapy Originate?

The term was introduced by the French physician Henri Leclerc (1870-1955). He had published numerous essays on the use of medicinal plants, most of them in *La Presse Medicale*, a leading French medical journal. These essays were outstanding for their style, and superb examples of the art of presenting a subject. He summed up his life-time experience in *Pr&s de Phytothkrapie*, a concise work that has since become a classic. Leclerc's life and work were described in lively terms in an obituary which appeared in *La Presse Medicale* on 14 May 1955.

Herbal medicine has come a long way since the days of the ancient 'herbalism'. The study

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Herbal Drugs (Medicinal Plants)

Gentle

e.g. chamomile, hawthorn
Complex of natural
principles
e.g. chamomile extract,
hawthorn extract

Powerful

e.g. belladonna, digitalis
Isolated natural
principles
e.g. atropine,
digitoxin

Midfield of numerous transitions
e.g. arnica, pheasant's eye, liquorice

Herbal Medicines for Heart Diseases

Gentle

hawthorn

Powerful

digitalis

Midfield
lily-of-the-valley

Herbal Medicines for Gastrointestinal Diseases

Gentle

chamomile
peppermint

Powerful

belladonna
(atropine)

Midfield
liquorice

Herbal Medicines for Nervous Diseases

Gentle

valerian

Powerful

opium,
melissa morphine

Midfield
hypericum

of the use of medicinal plants is now a scientific subject, a field of medicine in the same way as chemotherapy, hydrotherapy, electrotherapy and others. Knowledge of medicinal plants and their uses has been recorded from antiquity - by Imhotep, the priest-physician of ancient Egypt who devised the Step Pyramid of Sakkara, by Galen, personal physician to the Roman emperor Marcus Aurelius, and later by Paracelsus, the Abbess Hildegard of Bingen, and the authors of the great herbals of medieval times, right to the present day.

The rise of chemistry, the development of numerous synthetic chemical drugs, and the possibilities opened up by experimental pharmacology have caused herbal knowledge to be neglected. A new climate was created by methods evolved on the basis of modern physiology, concerned predominantly with effects that were measurable under experimental conditions. In this framework it was difficult to know what to do with the medicinal plants. Chemical compounds could always be exactly analyzed giving results in parts by weight of so and so many milligrams, etc. In

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phytotherapy this method on the whole applies only to medicinal plants with powerful actions – great difficulties arise in other aspects of the work, particularly with many of the plants with gentle actions.

Native Substance versus Pure Substance

It therefore became the aim to produce the active principles of all medicinal plants as far as possible as pure substances, which could then be investigated in the same way as clearly-definable chemical compounds. A new trend developed where such native substances were looked for, designating them phytopharmaceuticals. As a result it became possible to elucidate the mode of action of many of the old medicinal plants, and there can be no doubt that this brought major advances in phytotherapy. This new approach which allowed the subject to become open to scientific investigation. At the same time, the field of phytochemistry had greatly expanded. It proved possible to isolate a remarkable number of plant principles, and then to establish their chemical formulae. This in turn lent fresh impetus to herbal medicine, and was greatly helped by the fact that new methods had become available for the manufacture of standardized herbal pharmaceuticals. The pharmaceutical industry has made a major contribution in this field.

Yet there are reservations when it comes to the proposal that one can elucidate the mode of action of every medicinal plant by preparing and analyzing its active principles in pure form. There has been a tendency to disregard any medicinal plant that did not fit easily into the new design concept of phytopharmaceuticals, writing them off as being of doubtful use. In many such cases we simply have not yet found the correct method of determining the mode of action. Considerable scope remains for research in this area.

First attempts have already been made to develop a particular discipline of phyto-

pharmacology. Its function is to develop methods of assessing the total complex of a plant's medicinal actions, establishing adequate significance for such whole-plant actions. This would represent a great step forward. It calls for very different ways of thinking – moving away from seeking and isolating pure principles, learning instead to take medicinal plants for what they are: a complete product of nature, with innumerable individual constituents, active principles and other substances that may also make a significant contribution to the total medicinal action. It should then also become possible to assess the many herbal elixirs and extracts which continue to be so popular with the public. Most of them are made from ten, twenty or even more different medicinal plants, and many are based on old apothecaries' formulations. Until now it has not been possible to get an objective assessment of these multi-herb mixtures, however much they may have been recommended on the basis of practical experience.

The Role of Empiricism

Even where it is not possible to demonstrate activity in the principles, for the reason that the medical action is due to the total combination of constituents, empirical data should not be brushed aside. We need the two poles, experimental research on the one hand and properly conceived empiricism on the other, to make up the whole spectrum of scientific phytotherapy.

Terminology

The term phytotherapy has come to be internationally accepted for herbal medicine, being clear and unmistakable. As already stated, it was introduced into French medical literature by Leclerc, and was then also adopted in Germany to describe the use of medicinal herbs in the treatment of the sick.

Phytochemists, pharmacists and pharmacologists are trained to consider the properties and actions of isolated medicinal principles traditionally referred to as 'pharmaca' (singular 'pharmacon'). It was logical for them to refer to a plant drug as a phytopharmacon. The terms 'phytotherapeutic agent' and 'phytopharmacon' therefore mean the same, simply taking another point of view.

The field of chemical synthesis made tremendous advances after the second world war. The result was that 'simple' herbal drugs came to be largely forgotten and considered old-fashioned. Only a limited number of pure principles extracted from medicinal plants still held their own, among them digitalis, produced from fox-gloves. This was possible because the same methods could be used in analyzing and processing them as with synthetic drugs.

The large field of plant drugs, their medicinal use based on long-standing experience in empirical medicine, more or less fell by the wayside. These drugs, Leclerc's phytotherapeutic agents, now came to be used only in popular medicine. Hardly any mention was made of them in medical schools.

Yet they survived and have begun to enjoy an important revival. One reason was that the constituents and active principles of medicinal plants were being isolated and identified in plant chemistry. The data produced by these chemists confirmed the empirical uses and could no longer be overlooked. Plant drugs were gaining scientific recognition.

Such recognition was also required for the ready-made preparations offered by manufacturers. To gain 'scientific' recognition, the term 'phytopharmacon' was given preference over the term 'phytotherapeutic agent', used by the Continental European medical profession. The result has been an unnecessary confusion of terms. It grew even worse when the term 'phytopharmacotherapy' was introduced in place of 'phytotherapy'.

As already stated, 'phytotherapy' is a well-defined and easily accepted term. It is our task to make it come to life.

One interesting definition has been given by Professor H. E. Bock: 'Herbal medicine, either using whole plants or isolated plant principles, is called phytotherapy. It presents itself as a gift of nature, with a cosmic naturalness that makes it the obvious choice for a first-treatment approach. Generations have made use of it, gained experience, and cherished it, like a historical treasure, as a source for therapy.'

Objections to Phytotherapy

Bock also referred to a number of problems frequently encountered in the evaluation of herbal medicine, above all the vast and often highly imaginative range of indications. Modern scientific herbal medicine was emphatically against this. Nothing has done more to prevent recognition than the wholesale transmission of indications derived from the old herbalist tradition, often still brought before the public in articles and lectures with no scientific foundation at all. This also applies to many recent semi-scientific or popular books on herbal medicine.

The same thoughts were expressed by Vogel concerning the special nature of plant drugs (*D&c/r Apoth Ztg 1979; 119:2029-2033*). He put particular emphasis on the different standards to be applied when assessing the value and efficacy of plant drugs. Whilst it was necessary to investigate the efficacy of plant drugs with the methods of scientific medicine, we should also not forget the following: 'Demonstration 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 pharmaco-

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therapy 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 the people some of the time, and some of the people all the time, but you cannot fool all the people all 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 trials.’

Practical Phytotherapy

To determine the rightful place of herbal medicine in modern medicine, the above may be summarized once more. Pharmacists and pharmacologists are trained to work with medicinal agents, i.e. with pharmaceutical products or drugs. If the product is a plant one, it is natural to refer to it as a plant drug or phytopharmaceutical. Medical practitioners on the other hand are concerned with therapy. If they are making use of a medicinal plant, they think in terms of ‘phytotherapy’. If we use the term phytopharmaceutical or the term phytotherapy it is basically the same thing seen from another point of view.

There has been much discussion as to whether pure principles obtained from medicinal plants should also be included among the phytopharmaceuticals or phytotherapeutic agents, examples being digitoxin, a glycoside obtained from *Digitalis*, and atropine, an alkaloid from solanaceous plants. Some felt these were drugs ranking equal with synthetic chemical products. Others pointed out that in the strictest sense these supposedly ‘pure’ substances were not entirely free from residues of other constituents of the original plant drug. The commission responsible for standards applying to phytopharmaceuticals at the Federal Ministry in Berlin concluded that

these pure principles obtained from medicinal plants should be considered phytopharmaceutical products, They were aware that there can be no clear line of distinction between them and purely synthetic drugs, but agreed that a compromise had to be reached.

Treatment with medicinal plants, phytotherapy, can be used in all fields of medicine, although there are differentiations. As a rule the practitioner will prescribe gentle phytopharmaceuticals. These are effective in acute conditions, but are also worth considering for long-term therapy, for instance with many metabolic disorders, chronic heart disease and rheumatic conditions. Hospital doctors will mostly have to use phytopharmaceuticals with fast, powerful actions, such as strophanthin, atropine or morphine. The risks are twofold in this case. In the first place, there is a temptation to suggest to the GP that the patient should continue on these powerful drugs, forgetting that conditions are different in general practice and that a GP often has to limit his prescribing to gentle drugs – indeed, these are perfectly adequate for long-term treatment. The second point is that hospital doctors often have no real knowledge of gentle drugs and therefore tend to underrate them. They will often regard them as placebos, even though they are not. This results in the situation where young doctors face difficulties when they finish their hospital training and enter into general practice, difficulties they often do not know how to cope with. They first have to find their way into the different approach required in general practice, and this includes relearning about phytotherapeutic agents.

To stress the point, so as to avoid any misunderstanding – scientific phytotherapy stands between two poles. One is orthodox medicine with its two branches of pharmacology and clinical practice. Both want to recognize only those phytotherapeutic agents that fit into their particular spheres and which can be statistically confirmed by increasingly sophisticated methods. Clinical practice, particularly in hospitals, gives preference to

fast-acting powerful drugs and therefore only has use for the powerful drugs.

The other pole represents the needs of general practice, where there is a call not only for powerful phytopharmaceuticals but also for medicinal plants that have less toxic actions. Long-term therapy can be used in general practice, though this does give rise to the problem of assessing extended courses of treatment. In general practice one also finds the point of transition to the large field of nature cure, where powerful drugs with toxic effects are never used. From there it is only a short step to 'outsider' medicine, where the medicinal plants are frequently only used as a vehicle for the individual's particular methods.

Scientific phytotherapy as presented in this book is therefore the middle way between the two extremes. Anyone working in this field will be pleased if new active principles are found in medicinal plants and prepared in pure form. It often makes them easier to use in practice, as well as providing the theoretical background for much that has to date only been known empirically. Yet it would be wrong to present this as the only goal of phytotherapy. It is equally important to find methods that will permit an objective assessment of the combined active principles in many medicinal plants. In this respect we are only at the beginning, and reference will be made to interesting prospects for some of the plants described in this book.

New Medical Aspects to Phytotherapy

It should again be stressed that phytotherapy is an independent scientific discipline which accordingly requires specific approaches to theory and practice. It is still in the process of development, and as for any scientific discipline, cannot be otherwise. Certain specific tasks are already emerging. 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. It is this which gives herbal medicine special validity in the eyes of our patients. Repeated polls carried out by independent institutes have shown that the great majority of patients continue to hold 'medicines made from plants' in high esteem, despite all the progress medicine has made in other fields. More than 50% of those included in the polls stated that in case of illness they would prefer a plant-based medicament. Only about 20% said that a chemical drug, a 'medicament produced by chemical synthesis', seemed to them to offer better prospects. It is evident that medicinal plants are seen as being closer to nature, compared to synthetic chemical drugs, and thus closer to people. The Berlin pharmacist Heuber said that modern medicine has fallen too much under the spell of chemistry. American authors have warned that medicine is running the risk of building a new Tower of Babel, where people from different disciplines are no longer able to understand each other. Phytotherapy is able to take the middle line, making sure that medical practitioners do not move too far away from the foundations of their work as physicians.

Phytotherapy in Postgraduate Training

Postgraduate training must continuously present the potential of phytotherapeutic agents. It is important not to limit this to proprietaries, which is sometimes done without even mentioning the plant derivation. Physicians are often given the name of the pure principle and are hardly aware that it is of plant origin. 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 part used, whether leaf, flower or root, and so on. Where a chemical product has its structural formula,

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the medicinal plant has a specific image, and knowledge is required of the plant drug and its uses.

It is also necessary for medical students to learn more about plant drugs in their pre-clinical as well as clinical years. Knowledge of medicinal plants should be conveyed as part of preclinical studies, particularly since our native plants, ranging from digitalis and belladonna, as powerful drugs, to chamomile, peppermint, melissa and many others of the gentle drugs, will later play an important role in their practice. This is no less important than theoretical knowledge. During the clinical years, information should be given not only on digitalis, belladonna and other powerful drugs which are essential in serious and acute conditions, but also on medicinal plants with gentle action, with full discussion of recent research findings relating to them. This would be the function of outpatient clinical teaching, where one sees more of the chronic cases that are the main field for gentle herbal drugs. The problem is that a major precondition is lacking: our teaching staff have themselves learned practically nothing of this in their training and are therefore unable to pass on such knowledge. The solution will be to provide teaching appointments in practical herbal medicine, similar to the way it is now done in 'general medicine'. There is no need for large new institutes, as happened in the case of psychosomatic medicine. What matters is that a start is made, particularly since such teaching appointments require only minimal finance. Herbal medicine has in the meantime become a separate field of knowledge, research and teaching, and can no longer be ignored. It requires specific knowledge and special training, and this cannot be done as a sideline in medical training.

Phytotherapy is Not Homoeopathy

It is also important to know what phytotherapy is not. Everything necessary to distinguish it from non-scientific herbalism has

already been said. Unfortunately, however, there are still many problems in this respect. New herbals are constantly being published, even atlases of medicinal plants with handsome illustrations in colour where the text contains little or nothing of the discoveries made in scientific phytotherapy. Old, long out-of-date indications are repeated, often embellished, listing all the things the plant is supposed to be good for and doubtless leading to hopes that cannot be fulfilled. This return to a past which we thought was long since overcome makes it very difficult for phytotherapy to make progress in its fight for recognition as a scientific discipline.

It must also be stressed that phytotherapy is not homoeopathy, though it is often confused with it or mentioned in the same breath. This is not intended as a criticism of homoeopathy. Homoeopathy makes use of plant materials in fundamentally different ways from those of phytotherapy. The latter has taken some ideas from homoeopathy, particularly since that discipline has traditionally made use of a whole number of plants which are not generally in medical use. Some of these have been introduced into mainstream medicine, *Crataegus* for example. Others – the overwhelming majority – have not. It is possible that new avenues may open up for phytotherapy if research is done into more of the plant-based remedies used in homoeopathy. We do use homoeopathic mother tinctures in phytotherapy on occasion, but this is nothing more than making use of a sound method for preparing certain plant remedies which cannot be effectively prescribed in another form. It has nothing to do with homoeopathy as such, and will only be necessary in exceptional cases, since we now have an excellent range of purely phytotherapeutic products.

Phytoprevention

Preventive medicine is gaining increasing importance. It is in the nature of these things that there is no clear demarcation between

prophylactic and early treatment measures. A large number of medicinal plants have proved very useful in this field, so that we may speak of specific phytoprevention. Many gentle drugs, with the gentle action that makes them so suitable for long-term use, are ideal for this, like *Crataegus* for degenerative diseases of the heart. For the same reason, phytotherapy is no less important for convalescence and rehabilitation. Plant drugs will be used particularly when treatment started in hospital is continued in everyday life. When work is resumed one has the benefit of these drugs to maintain and support the function of an organ, even when it has sustained lasting damage. Chamomile is a point in case for longstanding gastric complaints, mint for gallbladder disease, dandelion for rheumatic complaints, and many more. Details are given in the relevant sections.

Side Effects

It is generally assumed by the public, and also by some medical practitioners, that plant drugs are harmless and therefore preferable. Put in such general terms this clearly is not true. The view is based on the assumption that all phytotherapeutic agents are drugs with gentle action. Yet even these cannot always be said to have no side effects. German and American doctors, for example, recognize a condition known as 'laxative colon'. This consists in electrolyte imbalance produced by long-term abuse of laxatives which are generally considered harmless. In severe cases the condition may cause exhaustion and symptoms resembling paralysis. Liquorice, or *Succus Liquiritiae*, can produce oedema, bradycardia and hypertension if taken for some time. Raw potato juice contains solanine and may therefore have side effects similar to those of atropine - enlarged pupils, for instance, and visual disturbances. Many other plants have a similar potential.

Powerful herbal drugs can obviously be highly dangerous, like any other drug. *Digitalis*, *Belladonna* and *Colchicum* are

examples. Yet they are all typical phytopharmaceuticals. It is necessary to know the individual plants, their potential actions and hence their indications. Phytotherapy is no different in this respect from pharmacotherapy in general: knowledge alone will prevent failure and ensure success.

The old dispute as to whether fresh plants, whole plant drugs or isolated principles are better, and should thus be given preference, has become irrelevant. We now know that there is no generally applicable answer. There are clear indications in many (though not all) cases, that the total complex of constituents which the fresh plant or whole plant drug presents, in a well-balanced composition, offers definite advantages for the patient. Experimental research on the other hand gives preference to isolated principles.

New Discoveries Concerning Gentle Drugs

Professor Haensel has made a particular study of phytopharmaceuticals. He defines 'gentle phytopharmaceuticals' as follows: 'These are natural products *per se* or drugs presented in their natural state that have a wide therapeutic range, no major toxic side effects, particularly where morphological changes are concerned. As a rule they do not produce remarkable effects instantly, but prove effective only with prolonged use.'

He considers 'time' a major factor in the action of gentle drugs. They will often only act after a considerable latent period, due to the summation of gentle actions. This must be taken note of, since it is easy to be deceived. The same also applies with many synthetic chemotherapeutic agents, gold therapy for instance, or chloroquine phosphate in the treatment of rheumatoid arthritis.

The time factor has not been fully taken into account until now. Haensel points out that even gentle drugs given over long periods can produce side effects in pharmacological trials, by regulative action on pathological processes. This again refutes the common allegation that

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a substance which has no toxic effects can also have no therapeutic effect. He says: 'Quite a few of the gentle phytopharmaceuticals are considered to have practically no effect because they are investigated with methods designed for substances with acute and powerful actions. An example is valerian, which unlike the barbiturates does not cause central nervous depression. Its sedative action, which can be demonstrated by encephalography (W. Mueller-Limroth, 1976) has a different mechanism of action from that of a low barbiturate dose. Gentle drugs produce no remarkable undesirable side effects, even if taken in overdose and for extended periods. They clearly do not depress vital nervous functions, nor do they produce noticeable morphological changes. Gentle drugs are thus effective medicinal agents with no undesirable side effects. Here at least, we come into conflict with orthodox medicine.'

The thesis that there is no effective action without undesirable side effects has always been based on somatic drug actions which can be assessed by the methods of experimental pharmacology. The real reason why the

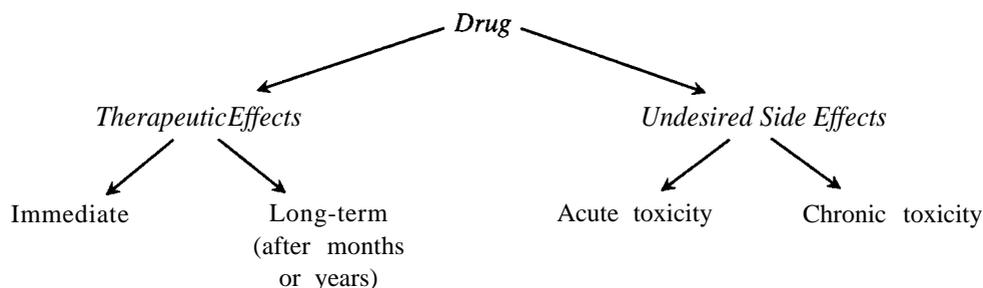
efficacy of gentle phytopharmaceuticals has not yet been exactly demonstrated is purely one of methodology, due particularly to the complexities introduced by the time element. Professor Haensel illustrates his views with two tables which are so informative that we reproduce them below.

Recognition by University Teachers

A number of respected university teachers have taken a positive attitude to phytotherapy. Professor F. H. Kemper of Muenster University gave a lecture in Karlsruhe in which he spoke of the high rank to be accorded to plant drugs. In his view, there were no first, second or third-class plant drugs, but only phytotherapeutic agents as such. Thousands of years of practical therapeutic experience - 'real experience' as Professor Martini had called it - were the equal in scientific terms of the experimental pharmacological 'experience' on which the use of modern synthetic drugs was based. Pharmacological experiments also had their limits.

Professor L. Demling of Erlangen Univer-

Differentiation of Drugs by Duration of Action (after Haensel)



Examples of 'Gentle Pharmaceuticals' in Relation to Powerful Drugs (after Haensel)

	<i>Gentle</i>	<i>Powerful</i>
Anti-inflammatory	azulene, flavonoids	cortisone
Antispasmodic	chamomile, fennel, peppermint	atropine, papaverine
Analeptic	camphor	coramine, lobeline
Sedative	hops, kavaine, valerian	barbiturate
Sympathomimetic	crataegus	adrenaline, isoprenaline

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sity Hospital has written as follows: 'Many things that had been firmly established in empirical medicine, but which for a long time survived only due to those interested in nature cure, are now, in the light of modern methods of investigation, showing themselves to be effective medicaments. Examples of these are onion and garlic for thrombotic processes and hyperglycaemia, carminatives for spasms affecting gastrointestinal sphincters, and alcohol as a stomachic to stimulate appetite. The limits set to information obtainable from animal experiments, and the fact that the results of trials made on humans also do not apply worldwide, suggest that one should be cautious about dividing therapeutic measures into those that are effective and those that are not. New aspects are always arising, and manifestly effective drugs should not be brushed aside merely because no animal experiments have been done.'

Professor R. Hegenauer of Leiden University has stated: 'The extensive experience in Europe and elsewhere of the therapeutic use of medicinal plants must inevitably lead to their critical examination. The term 'popular medicine' (though often used derogatively by orthodox doctors) is in no way synonymous with humbug, charlatanism and quackery, but gives expression to knowledge gained and passed on through many generations, relating to the drugs available before the turn of the century. It is one of the functions of modern science to unearth this treasure, now partly buried under superstition and mystical concepts, and learn to give it its rightful value. This will only be possible if the pharmacology of isolated principles is developed as well as the pharmacological evaluation of compound preparations, which is what fresh plants, plant drugs and plant-based preparations really are. Excellent pharmaceutical agents such as chamomile, valerian root, bloodroot and perhaps also fresh plantain leaves, all exclusively produced with solar energy, are disregarded by a pharmacology geared to isolated principles, because they are not really accessible by its methods. Slightly amended, the motto

which Leon Eisenberg (1977) placed at the head of his article on drug research also applies to our field: 'Impeding crude drug research, no less than performing it, has ethical consequences. Not to act is to act.' As long as no serious attempt is made to develop appropriate methods for assessing the therapeutic actions of whole medicinal plants and of preparations made from them, any refusal to accept them as therapeutic agents may be regarded as unscientific. This attitude also goes against the highest dictum of medical practice - *Salus aegroti suprema lex*. It deprives the physician of existing means for helping mankind.

Phytotherapy in Modern Medicine

It is necessary to define the role which medicinal plants have to play in modern medicine. The easiest way may be to look back at similar situations in the past and see how they apply today. About 3,000 years ago, Asclepios of Thessaly, one of the great men of ancient medicine, gave the following sequence for the use of therapeutic agents: 'First the word - Then the plant - Lastly the knife'.

This needs some modification today, for we cannot do without the major chemotherapeutic agents in the armamentarium. I suggest the following: 'First the word - Then the plant drug - Next the major synthetic chemotherapeutic agent - And finally the knife'.

We also see the position which medicinal plants should hold in modern medicine: before the major chemotherapeutic agents, and indeed before surgery, in any case in their own position and in their own right. The sequence also establishes the degree of seriousness and danger of the different interventions, being a progression from the least invasive to the most invasive.

Some may feel that hydrotherapy and dietetics have been omitted. Asclepios did not give them special mention. Part of the reason may be that herbal baths, widely used even in antiquity, were considered to be part of the 'plant' aspect. Diet also includes plant

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products, and we will not go far wrong if we consider these two methods of the 'plant' aspect of therapy.

On the other hand it is important to emphasize that the 'word' has been put as the *first* step in medical practice. The 'word' is a psychological remedy, addressing first of all the soul, through which it has important healing effects right into the physical sphere. Modern psychosomatic medicine has made this clear again. The 'word', spoken in the right way, is a force of much greater power and penetration than a materialistic world has been prepared to accept. If there is a dialogue between physician and patient, and at the same time a plant medicament is given, it is the ideal method of healing, and all that is needed in the majority of cases. This applies particularly to the many cases seen in general practice. Specialists could also profitably remember this basic fact, brought to mind again by psychosomatic medicine.

The medicinal plant thus takes us into a region where we touch on the limits of scientific and medical knowledge. Some time ago, I took up a concept presented by Linnaeus, the Swedish botanist and physician, when he spoke of a *Philosophia botanica*. Occupying oneself with the plant world can lead us to philosophical insights and reflections that touch on the 'final questions'. The study of plant life teaches us to see man as part of Nature, subject to her laws. The more we try and control Nature, instead of using our reason to find our rightful place within her, the sooner we become aware that we have gone beyond a limit. When General Moltke went into retirement, someone asked him what he intended to do, having lived such an active life. His reply, 'Plant another tree', speaks of a man who was aware of his place within Nature. To watch a plant grow according to inherent laws, developing flower and fruit, is a truly great experience, always new. We need to keep this 'naive' approach, so that we see the harmony of the whole in one of its parts. We should also always remember that a plant, and therefore the raw material for investi-

gation and application in this field, is living matter, organic substance, subject to its own laws and therefore more difficult to analyze and process than minerals and chemical products.

There can be no 'back to nature' in the way that Rousseau saw it. We have to use the whole armamentarium of modern medicine, but must not allow ourselves to be ruled by technology. The aim should be to find a middle way, to develop a materia medica that includes everything new as well as everything that has proved its value in the past, critically selected with a view to its usefulness for mankind. Phytotherapeutic agents occupy considerable space in this. The first essential, however, is proper knowledge of the plant drugs. They have the advantage over synthetic drugs that their origin, the plant itself, is there before our eyes, very much like the structural formula that a chemist would be using.

Phytotherapy should work with modern chemistry and its application in clinical practice, not against it, and the two fields can complement one another if understood properly. If we consistently apply this approach in our research and teaching, phytotherapy will achieve the recognition that is rightfully due to such a large field of medical therapy.

References

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Traditional herbal medicines are getting significant attention in global health debates. As attention and public funding for international traditional herbal medicine research collaborations grows, more detailed analysis of ethical issues in this research is warranted.