HERBAL MEDICINE
PHYTOPHARMACEUTICALS

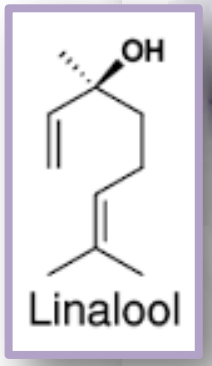
Prof. Dr. Filiz MERİÇLİ

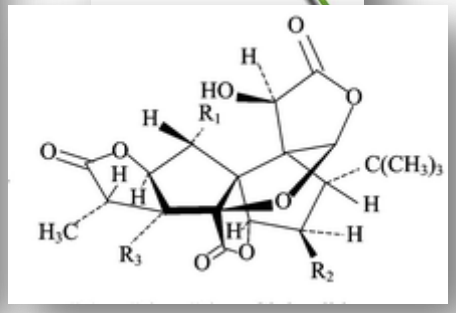
05.11.2015

Medicinal plants, binominal naming, identification of the plants, Taxonomy..

Pharmaceutical Botany

Active principles of medicinal plants, seconder metabolites, glucosides, alkaloids, terpenoids, phenolic compounds,lipids,etc. and biological activities,usages





PHARMACOGNOSY I, II, III

Physiology
Pharmacology
Pharmaceutical technology

PHYTOTHERAPEUTICALS

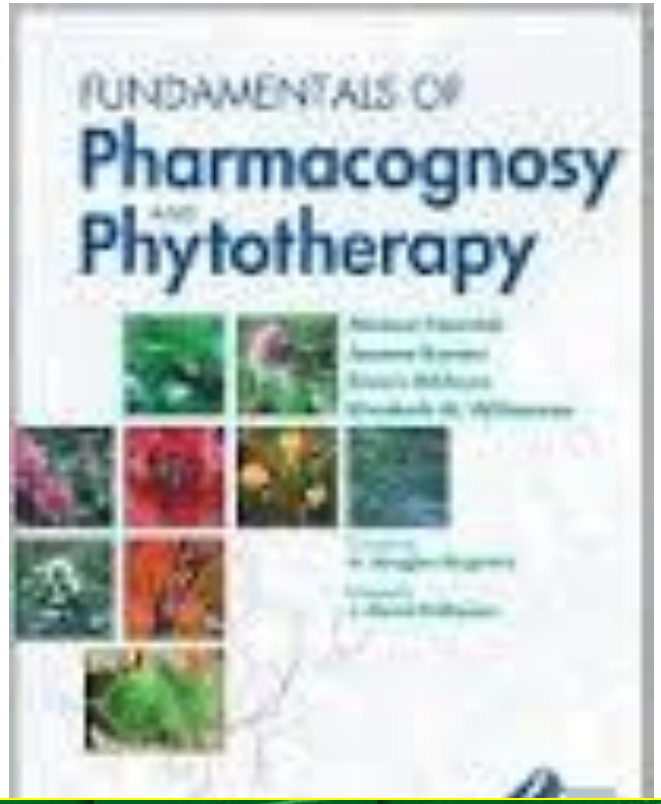
The usage of herbal products is widespread and a popular trend, nowadays.

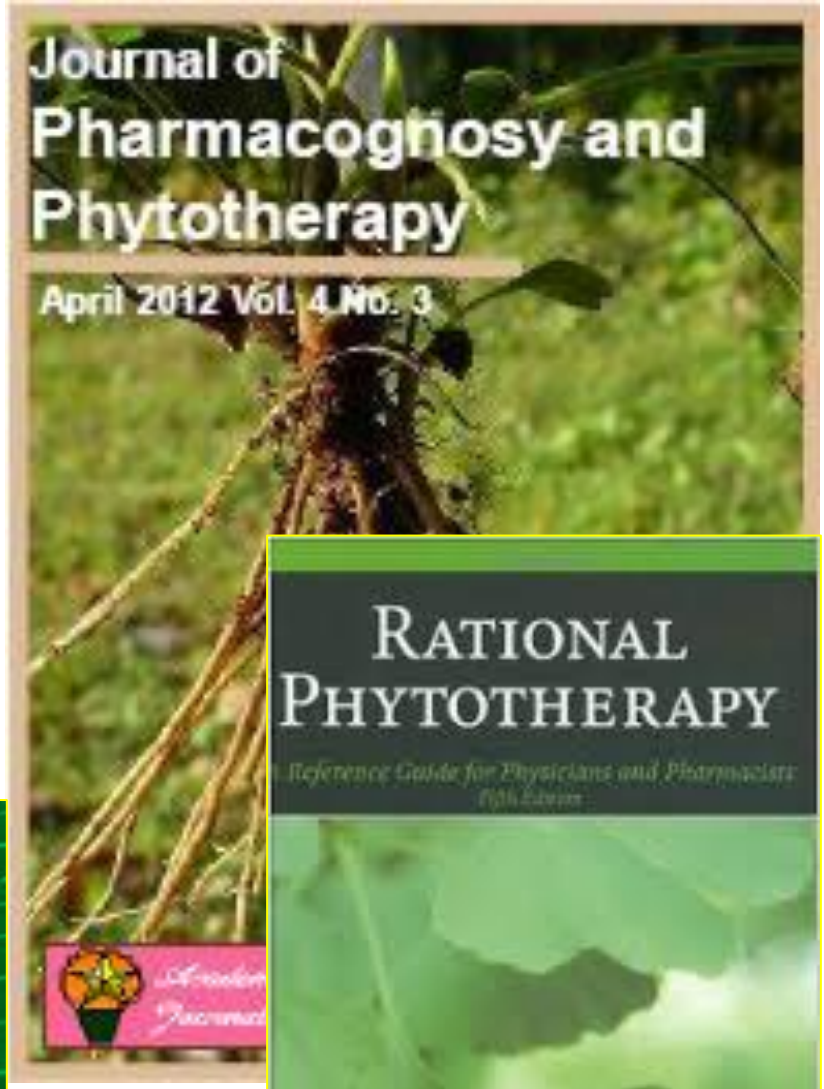
Wrong herbal products, wrong dosage, wrong usages cause serious toxicity or interactions, even result with death.

Lida…

Red pepper tablets…

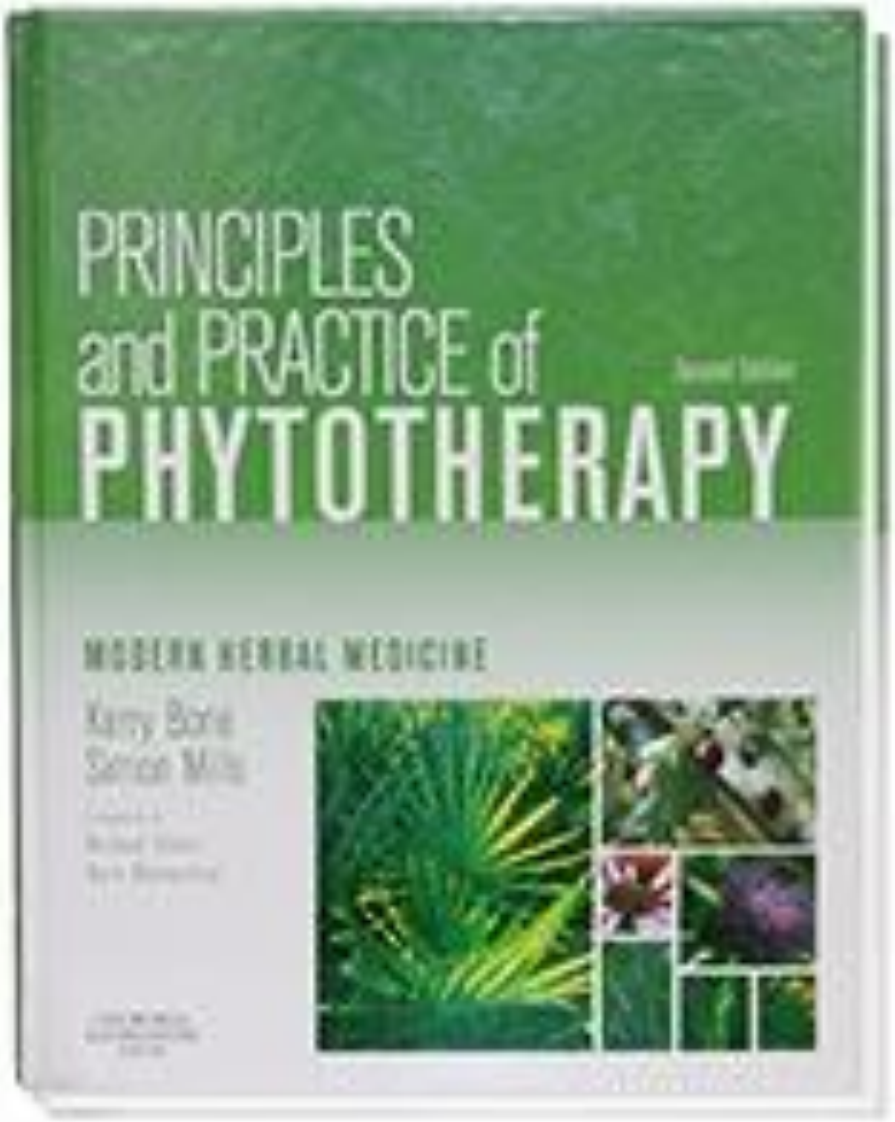

German Drug Index
ROTE LISTE
2009
Total drug : 8798
Herbal active
principles : 715
Phytomedicine
produced by
standardized Thyme
extract.
Victoria Apotheke-
Saarbrücken-
Germany

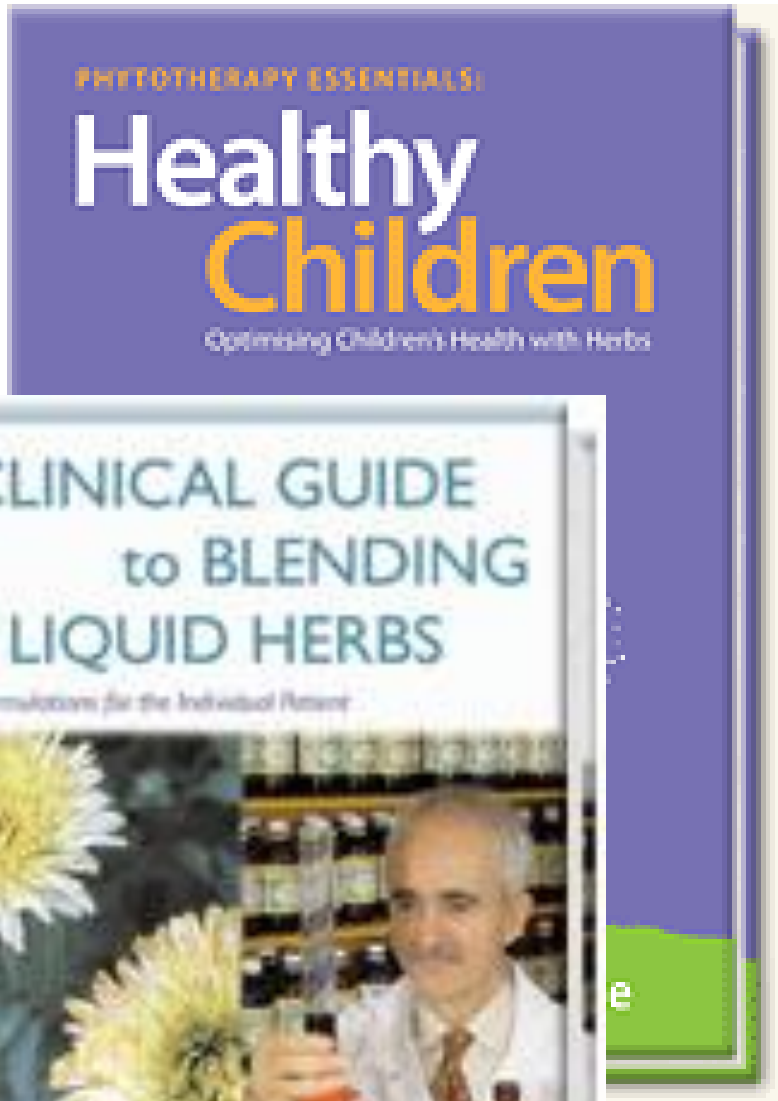

FUNDAMENTALS OF
Pharmacognosy
AND
Phytotherapy


Journal of
Pharmacognosy and
Phytotherapy
April 2012 Vol. 4 No. 3

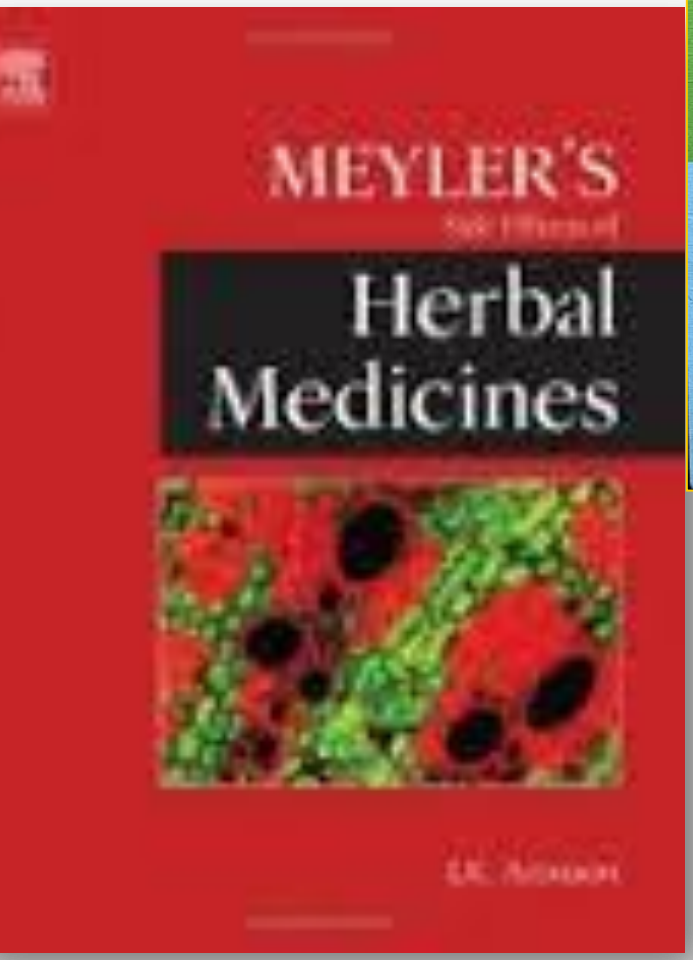
RATIONAL
PHYTOTHERAPY
A Reference Guide for Physicians and Pharmacists
Springer

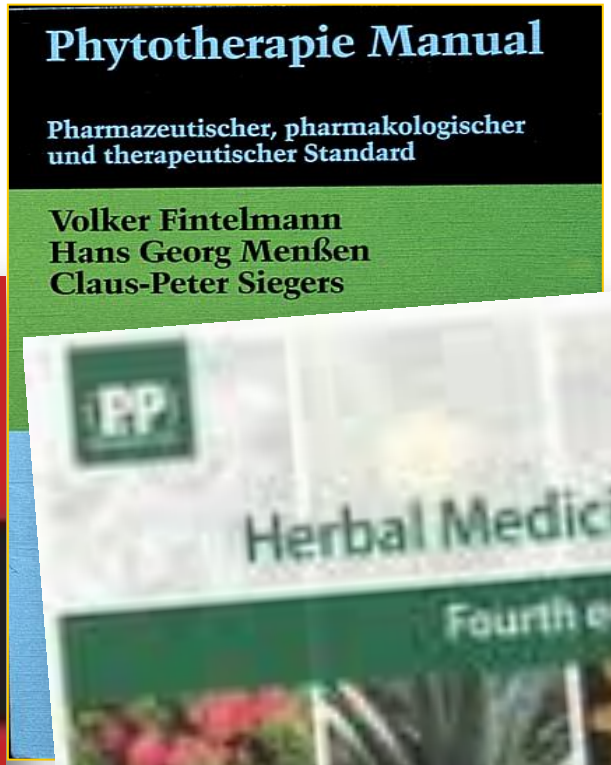

JPPRes
Journal of
Pharmacy &
Pharmacognosy
Research


PRINCIPLES
and PRACTICE of
PHYTOTHERAPY
MODERN HERBAL MEDICINE
Kerry Bone
Simon Mills

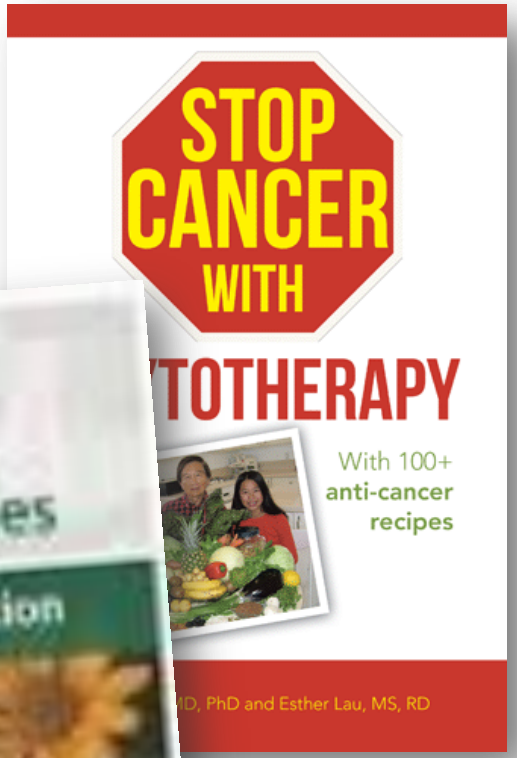

PHYTOTHERAPY ESSENTIALS:
Healthy
Children
Optimising Children's Health with Herbs

A CLINICAL GUIDE
to BLENDING
LIQUID HERBS
Herbal Formulations for the Individual Patient
Kerry Bone


MEYLER'S
Herbal
Medicines


Phytotherapie Manual
Pharmazeutischer, pharmakologischer
und therapeutischer Standard
Volker Fintelmann
Hans Georg Menßen
Claus-Peter Siegers

PP
Herbal Medicines
Fourth edition


STOP
CANCER
WITH
TOTHERAPY
With 100+
anti-cancer
recipes
D, PhD and Esther Lau, MS, RD

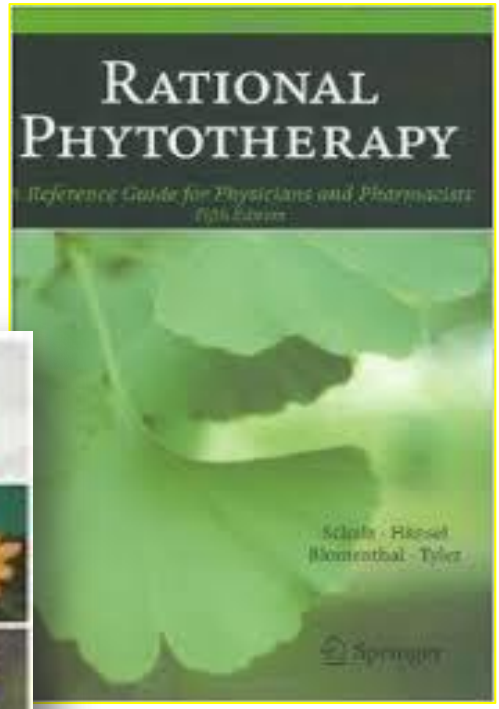
PHYTOTERAPY : The treatment of the daily diseases and health problems using herbal pharmaceutical products. It is one of the wellknown and widespread complementary treatment method.

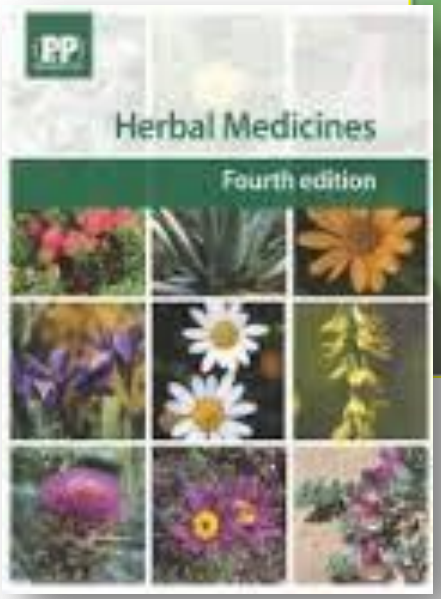
"**Phytotherapy",** which is based upon herbal medicines, is the bridge between herbal folklore (i.e. Traditional medicine, folk medicine) and allopathic (conventional) medicine.

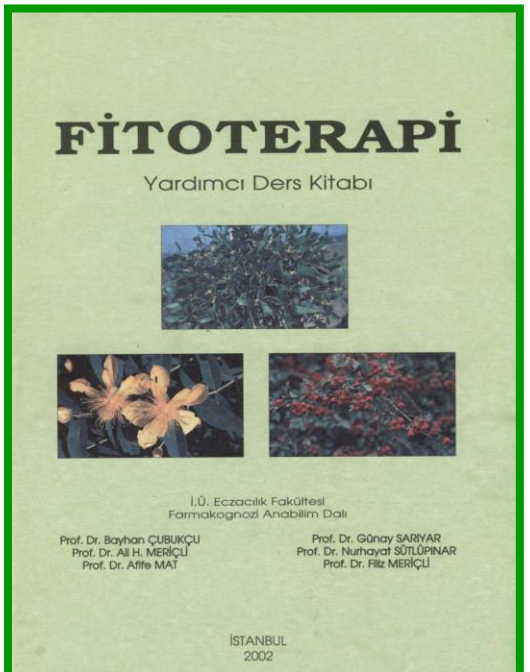
The term phytotherapy was coined by Henri Leclerc, a French physician (1870-1955), who summarized his lifetime in a work entitled "Precis de Phytotherapie".

Phytotherapy describes the efficacy and limitation of herbal medicines in the treatment of human diseases:

- **Rational Phytothearpy**
- **Herbal Remedies**
- **Herbal Medicines**
- **Naturopathy**
- **Natural remedies**
- **Phytomedicines**







- **Fitoterapi=Bitkilerle Tedavi** (TR)

"**Medicinal plants**" contain phytochemicals (active principles) with pharmacological activity in humans and/or animals.
Medicinal plants are used for medicinal purposes and must be considered to be drugs.

Another term commonly encountered is "**herbal medicine«** or **"botanical medicine**", as preferred by the Food and Drug Administration (**FDA**). This definition refers to the use of plants or plant substance as medicinal agents, as does the term"**herb**", "**herbal drug**« and "**herbal remedy**".

How ever, herbal remedy is not synonymous for homeopathic remedy, as frequently stated by people and practitioners.

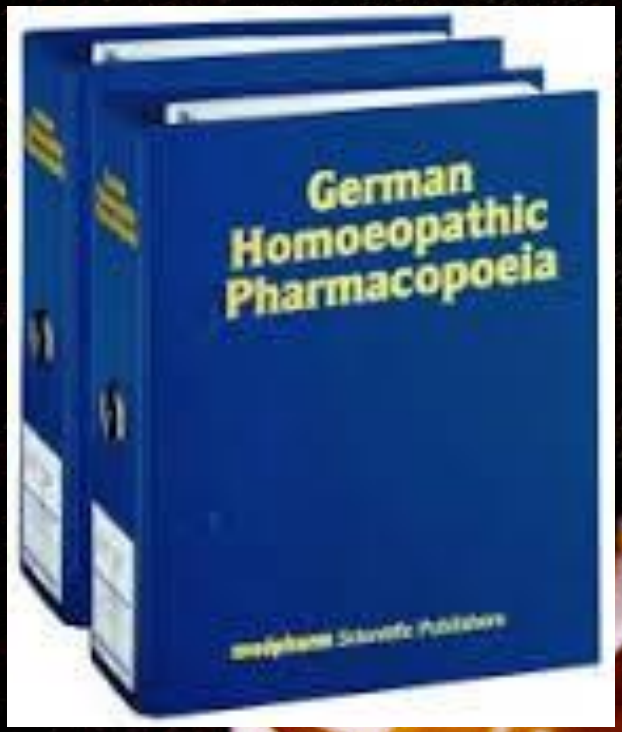
Homeopathy was established by German physician Samuel Hahneman. It is an extremly different treatment system which uses plant exracts but with an immeasurable amount (Diluted more than 100 times).

Phytotherapeuticals and homeopathic remedies, both use plants, but herbal remedies (phytotherapeuticals) contain active principles which exert a pharmacological effect, while homeopathic remedies contain herbal and active principles in amounts so low to be immeasurable (a sufficient molecular memory exerts a therapeutic effect).

ROTE LISTE 2009 (German Medicine Index)

645 Homeopathic medicines

Der andere Weg = Another way
= Bir başka yol



HOMEOPATHY

A special course

It may contains **Toxic plants**, toxic minerals etc.

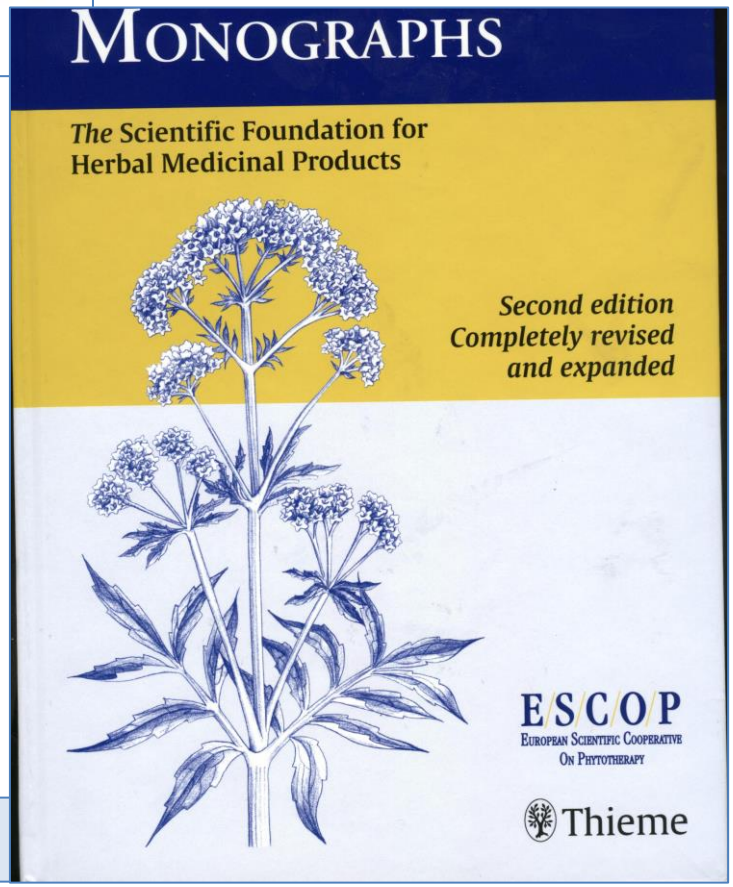
If a Drug Box has the mark **CH**, **D** 6, **X** 12 or **Ø**, **it is a homeopathic medicine**.


PHARMACIE
KLEBER
HOMEOPATHIE
BOIRON
dents sensibles
elmex
SENSITIVE
LA ROCHE-POSAY
LABORATOIRE DERMATOLOGIQUE
20 MAR 2010

."**Phytomedicine**" is another term proposed by the European Union (**E**uropean **M**edicines **A**gency –EMA*)

EUROPEAN MEDICINES AGENCY
SCIENCE MEDICINES HEALTH

and the **E**uropean **S**cientific **Co**operative for **P**hytotherapy (**ESCOP**) to indicate phytopharmaceuticals (herbal pharmaceuticals) .



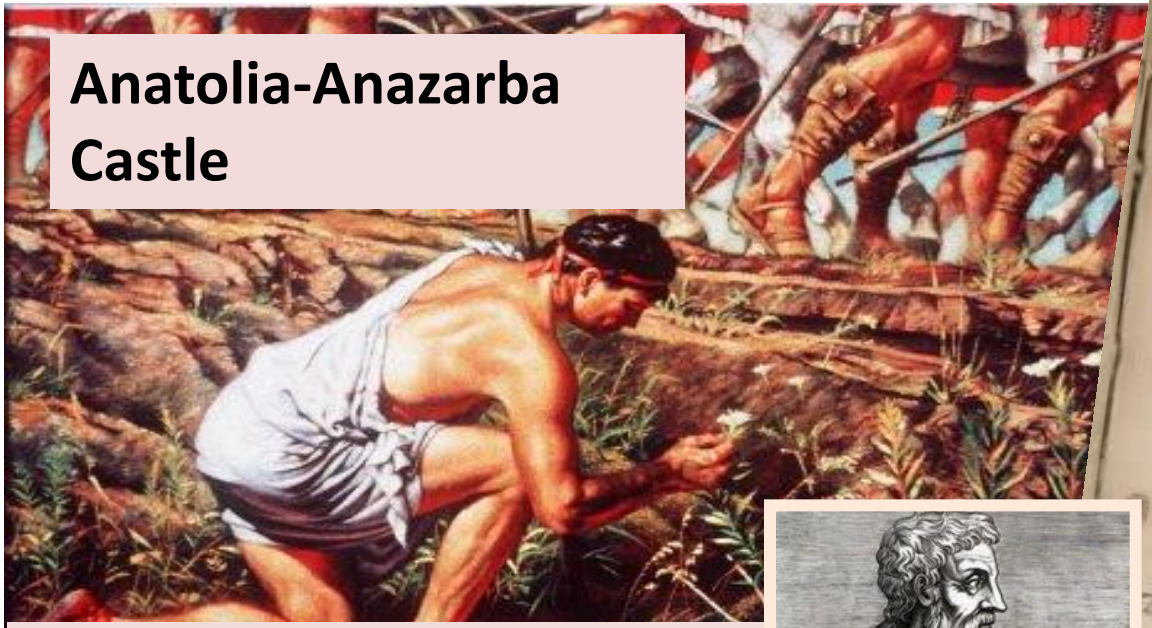
* **E**uropean **M**edicines **E**valuation **A**gency-EMEA

History of the phytotherapy begins with the history of humanbeing. First medicines of humanbeing were prepared with some parts of plants which grown wildly around.

In the first ages, the people when they had been sick, they had used various plants growing near their caves. Through trial and error people had found which plant cure of the which disease. Those informations has been transferred from generation to generation. Thus treatment cultures occured.

Treatment Cultures

Egypt
Greek
Roma
Asia Minor (Anatolia-Turkey)
Ayurvedic-India
Chinensis
Incan
Mayan

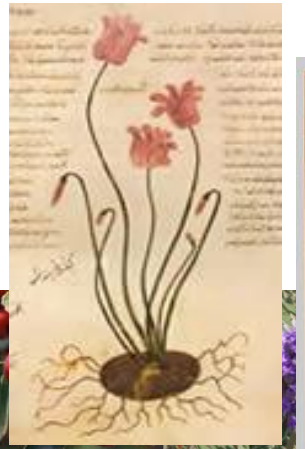


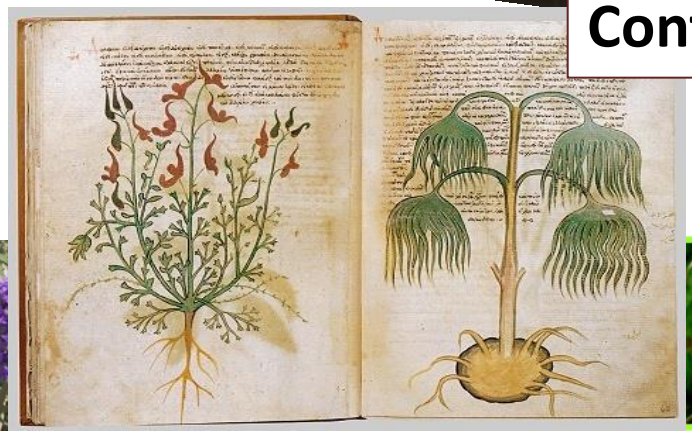
Anatolia-Anazarba Castle

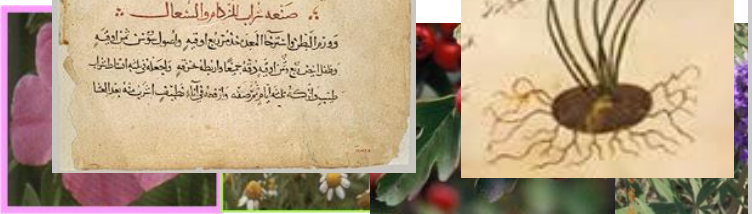
Pedanius Dioscorides
(90-40 B.C.)


Dioscorides

“Materia Medica”
Contains ~500 Plants







Herbal medicines originated from the ancient use of wild plants. **Depending on the locality and climatic conditions under which the plant was grown, the content of active components can vary.**

Cultivation of medicinal plants and agricultural conditions :

Today, with the possibility of carefully controlling the cultivation of medicinal plants and even improving them genetically, it is possible to develop and market a wide variety and quantity of herbal drugs of consistent chemical composition and excellent quality.

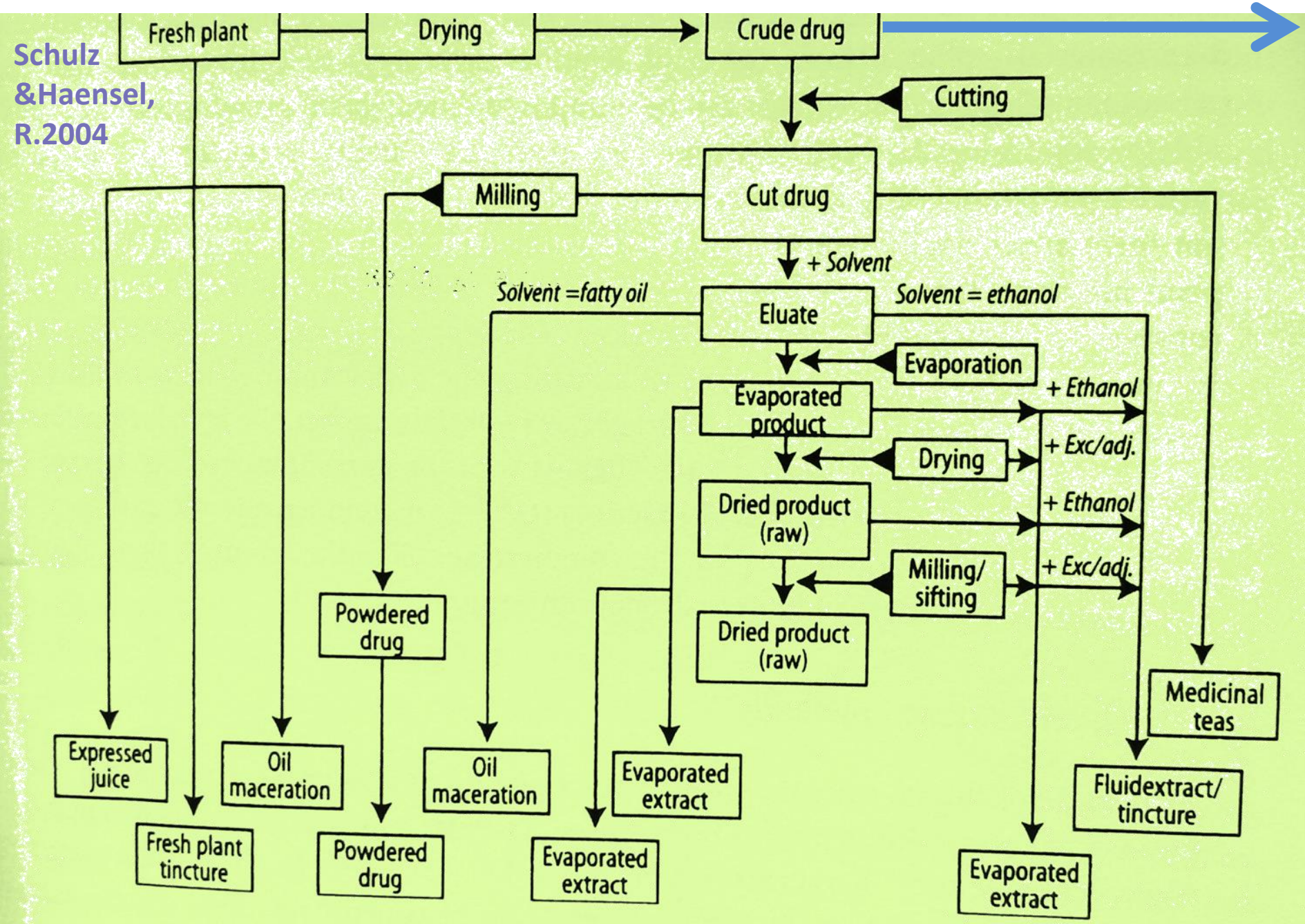
Lavandulae flos / Lavender flowers/ *Lavandula officinalis*

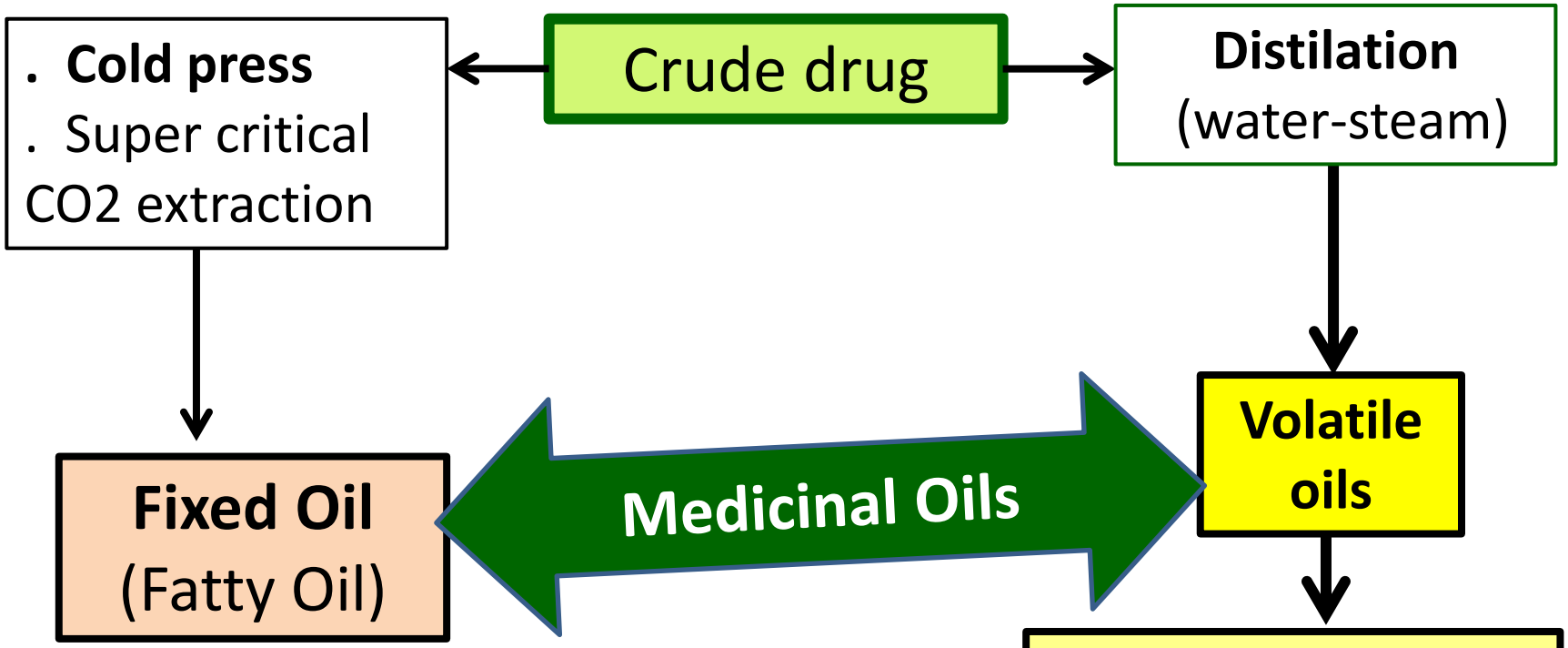
It is possible to develop and market a wide variety and quantity of herbal drugs of consistent chemical composition and excellent quality.

To store raw (crude) material with the same chemical composition for long periods of time, important progress has been made in **processing and preserving** the raw material of medicinal plants through **modern methods of freezing, stabilization, dehydration through drying in vacuum, and lyophilization**.

Technical processes involved in the production of herbal medicines

Schulz &Haensel, R.2004

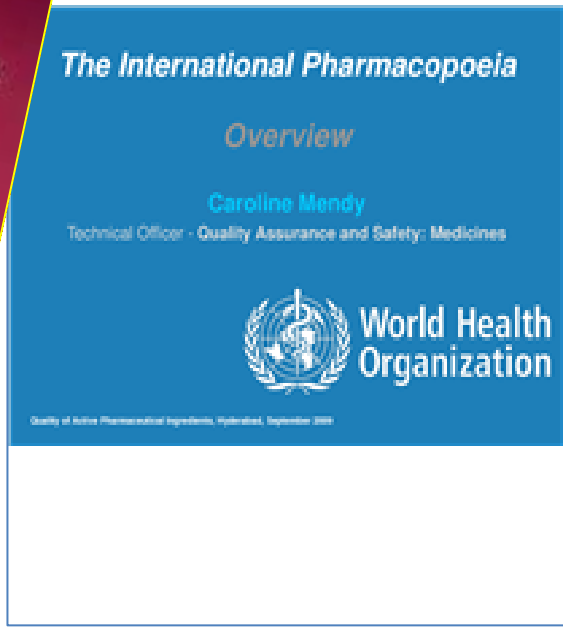




- ✓ **Black cumin oil** (Nigellae sativae oil,çörek otu yağı)
- ✓ Almond oil
- ✓ **Pomegranate seed oil** (nar çekirdeği yağı)
- ✓ Peach kernel oil (şeftali çekirdeği yağı)

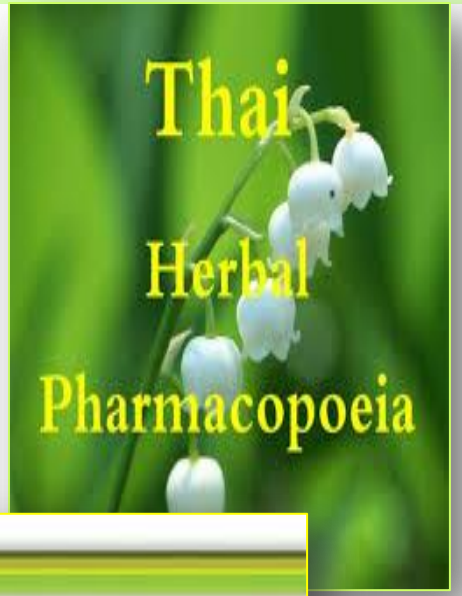
- ✓ **Lavandulae aetheroleum**
- ✓ Melissae aetherolum (Lemon balm oil)
- ✓ **Mint oil** (Menthae aetheroleum)
- ✓ **Tee tree oil** (Melaleucae aetheroleum)

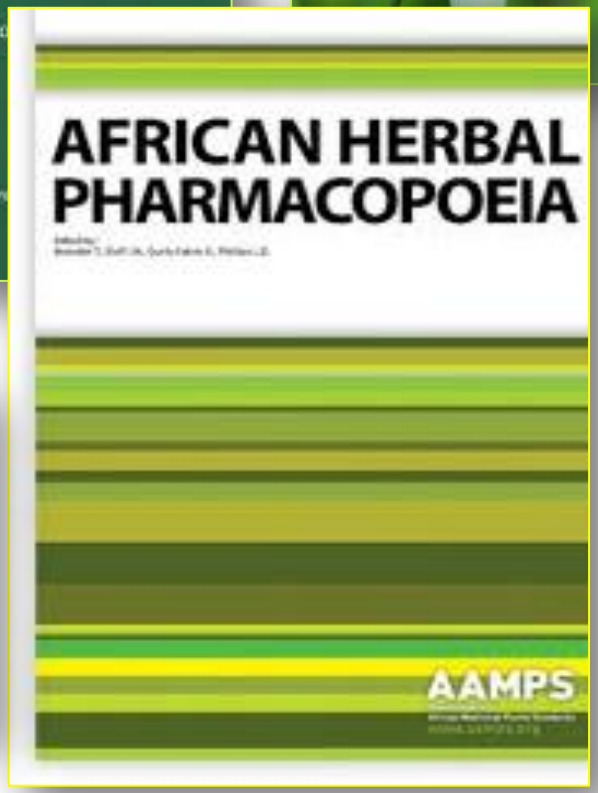
Crude drugs, botanical medicines, herbal medicines, phytomedicines and phytopharmaceuticals, like conventional medicines should be included in every country's Pharmacopoeia*.

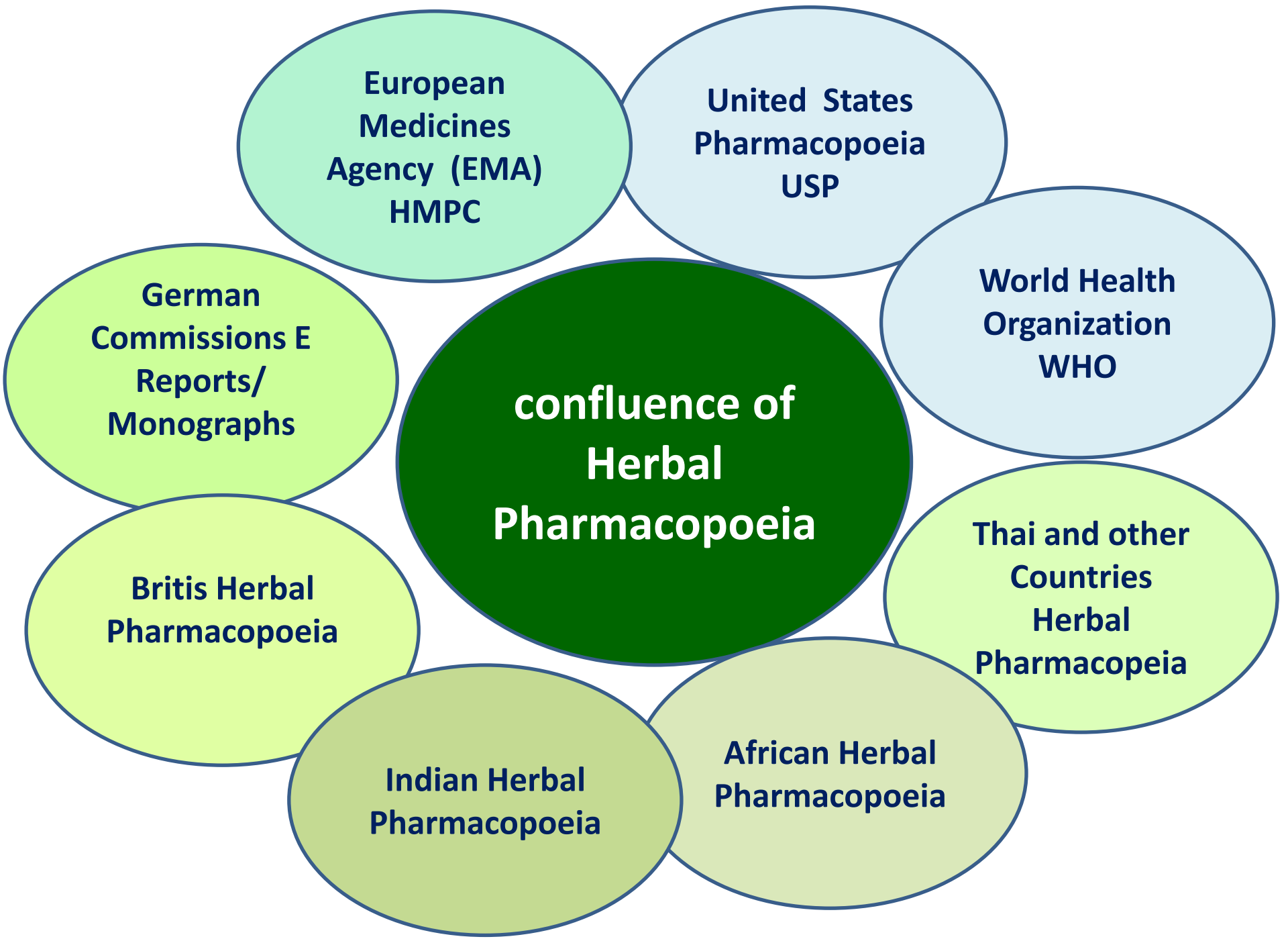


**** Pharmacopoeia : an official book which lists all the medicines and the characteristics that those must posses in order to go on sale.***

There are also many HERBAL PHARMACOPOEIA






European Medicines Agency (EMA) HMPC
United States Pharmacopoeia USP
World Health Organization WHO
German Commissions E Reports/ Monographs
confluence of Herbal Pharmacopoeia
Thai and other Countries Herbal Pharmacopeia
Britis Herbal Pharmacopoeia
African Herbal Pharmacopoeia
Indian Herbal Pharmacopoeia

The Complexity of Herbal Products

The quality of a herbal medicine is believed to be directly related to its **active principles**. These constituents have been referred to as "secondary" plant substances (phytochemicals).

However, herbal medicines contain other substances, often neglected and poorly understood, which render the ingredients "active« as medicinal agents.

Thus, it is often difficult to reproduce the effect of the herbal drugs by isolating its individual constituents and recombining them in the laboratory.

The Complexity of Herbal Medicines

- Some of the plants compounds are generally inactive substances (cellulose, lignin, etc.) but also substances of minimal pharmacological interest, such as the bitter or aromatic substances that stimulate the gastric and intestinal secretions thus making the dissolution, and consequently the absorption of the active principle possible or more complete.
- The tannins and saponins, very common in the vegetable kingdom, as the salts of organic acids may facilitate intestinal absorption of active plant principles through effects on intestinal motility or bile secretion.

- Like the mucilages and peptic substances, vitamins can also modify the functions of the intestine mucous membrane and consequently the absorption.

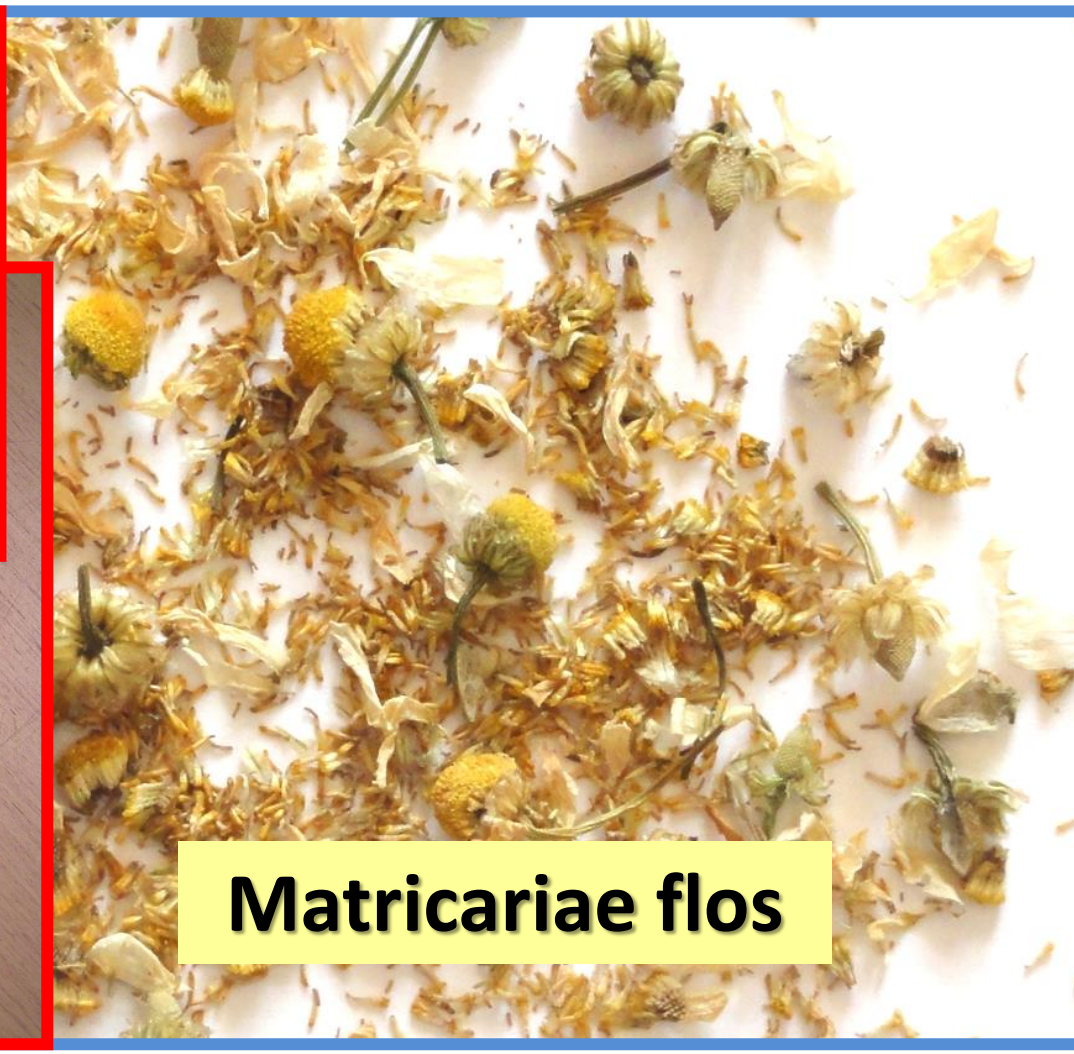
The Complexity of Herbal Medicines

- There is also the possibility of interactions between plant constituents. These agents may be closely related both chemically and therapeutically to the main constituents responsible for the pharmacological activity.
- In some cases a herbal medicine may contain a variety of pharmacologically active agents that are not related chemically or therapeutically. In most cases, therefore, herbal medicines represent a synergic complex of active principles whose actions and applications can be difficult to reproduce. Contrary of conventional drugs, herbal medicine must **be seen as a complex pharmaceutical preparation** and as such should preferably be administered in the form of an extract.

Are the Herbal Medicines Safe?

The safety of herbal medicines depend on their correct use.

- **Correct medicinal plant**

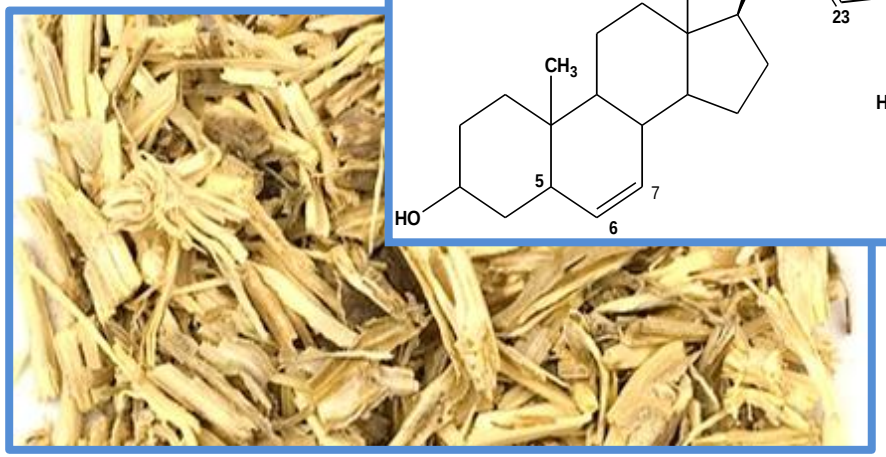


Are the Herbal Medicines Safe?

The safety of herbal medicines depend on their correct use.

- **Correct part of medicinal plant**

Different parts of plant may contain different active prenciples. Example : Roots of nettle (Urtica dioica) contain **steroid isomers** and are usefull against BPH disorders.



But the leaves of the same plant are used as diuretic.

➢ Correct part of medicinal plant

Different parts of plant have different biological activities; so use for different health disorders.

Red pulps of the fruit of Rosehip (*Rosa canina*, wild rose) **is used in cold-flu disorders during fall-winter- spring**

But powder of the seeds (yellow colored) is used for manufacturing capsula against arthritis.

- **Correct active principles with the correct amount**

The active components vary as a result of climate, soil quality, genetic factors and exposure to chemicals; quality control is lacking so that problems such as **contaminations with heavy metals or microorganisms** and **adulteration with botanicals** and/or chemicals may arise during preparation, **storage or shipping**; several common herbal medicines contain a mixture of herbal drugs and in some cases are self-prescribed.

The active (and toxic) components vary as a result of climate, soil quality, genetic factors and exposure to chemicals; quality control is lacking so that problems such as **contaminations with heavy metals or microorganisms** and **adulteration with botanicals** and/or chemicals may arise during preparation, **storage or shipping**; several common herbal medicines contain a mixture of herbal drugs and in some cases are self-prescribed.

Every botanical drug should be accompanied by

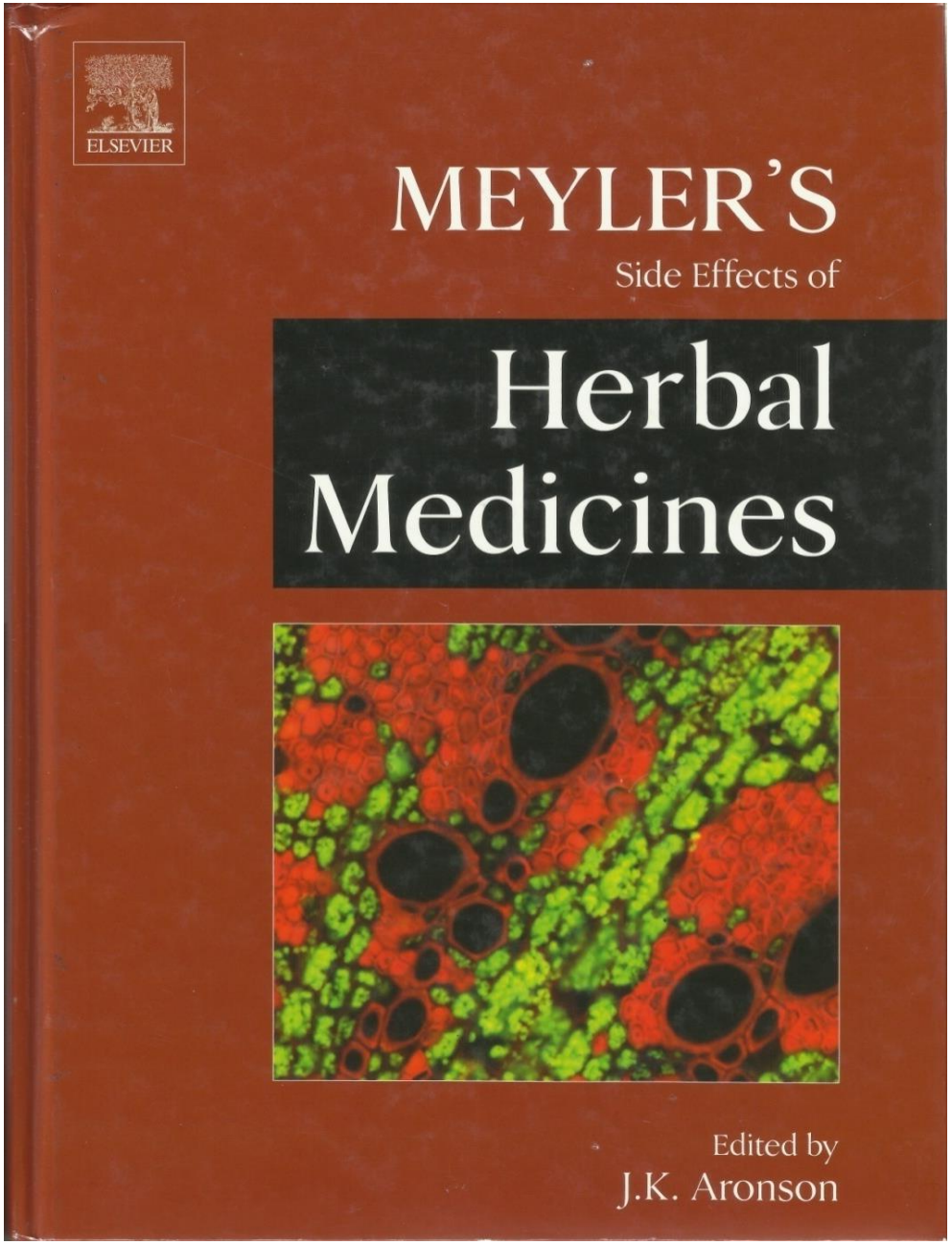
- a technical index card with the latin name of the plant and drug
- also producer, the picking, packing knowledges,
- expiry dates,
- the strength of the active principles and
- certification of the absence of contaminants.

Are the Herbal Medicines Safe?

A herbal medicine is similar to any medicine.

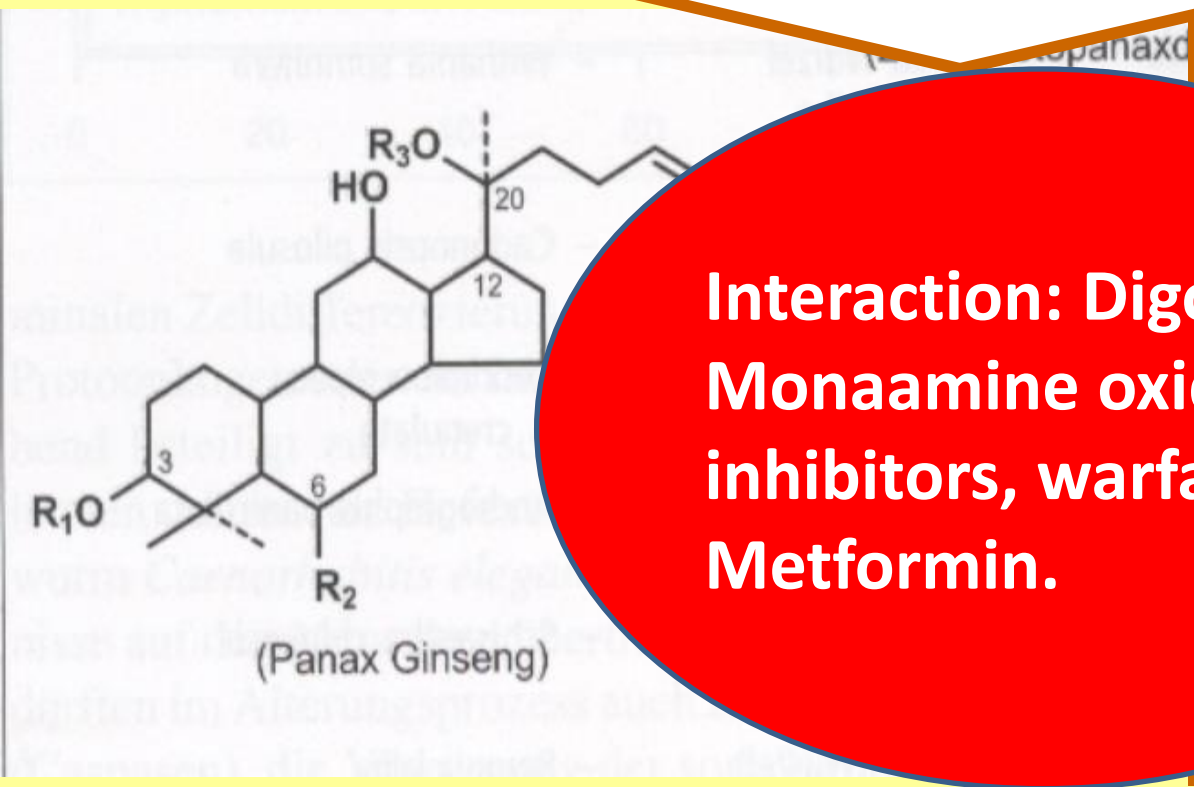
Taking a herbal medicine means, that taking phytochemicals which produced by plants tissues.

Therefore, both patients and physicians must be able to make the risk / benefit assessment, before using any herbal medicine.



Side effects, adverse effects over dose problems, interactions with other plants and synthetic medications can be seen.

Ginseng roots (contain ginsenoside derivatives) **are used as tonic,antifatigue,for declining capacity for work and concentration.**



(Panax Ginseng)

Interaction: Digoxin, Monaamine oxidase inhibitors, warfarin, Metformin.

Panax ginseng

Ginkgo biloba (TR-Mabet ağacı, fosil ağaç)

Indications : symptomatic treatment of deficits due to organic brain disease; concentration difficulties,vertigo,tinnitus,memory impairment.

Interactions:

Anticoagulants

Aspirin

Warfarin

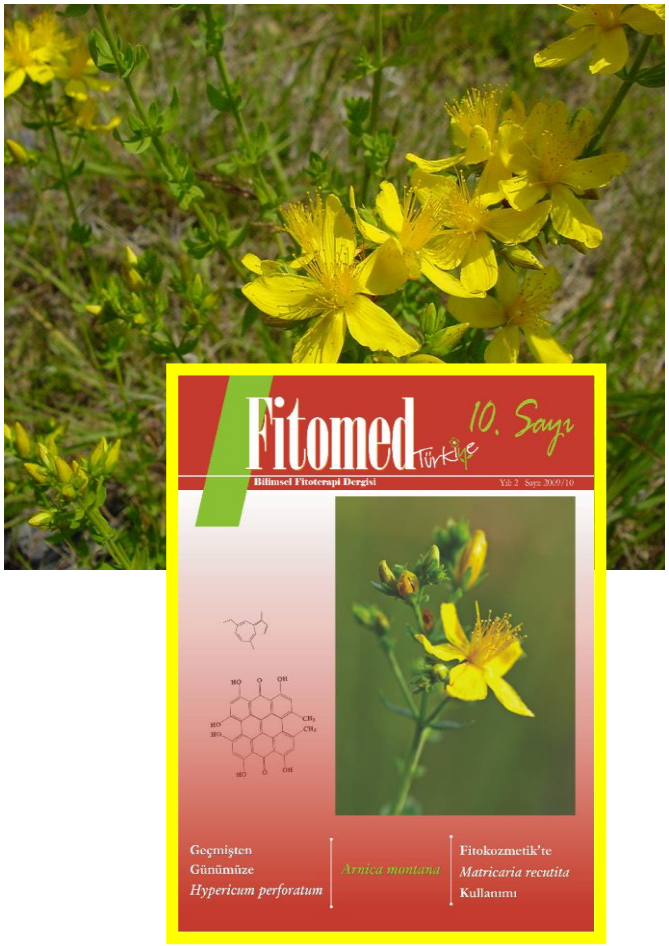
Caffeine

Ergotamine

General anesthetics

- Blood thinning medication user
- Before surgery

St.John's wort-*Hypericum perforatum,* Sarı kantaron herbal antidepressant



Interactions :

1. Indinavir
2. **Digoxin**
3. Cyclosporine, organ rejection
4. **Antidepressant medications**
5. Sympathomimetic amines
6. Pseudoephedrine
7. Yohimbine

8-Cholesterol-lowering drugs (simvastatin, etc.)

Overdose increases sensitivity to sunlight : hiperisismus

Standardization of Herbal Medicines

Main problems of phytotherapy is the standardization of herbal preparations.

If a preparation of a given herb is shown to be effective, this does not necessarily mean that another preparation of the same drug is similarly effective. The use of preparations inadequately standardized involves a considerable risk of distortion and produces a false negative overall result. To carry out reliable clinical trials the herbal medicines must be of standardized quality.

Standardization of Herbal Medicines

The standardization, in the case of a herbal drug, is not simply an analytical evaluation, i.e. the identification and assay of active principles or of a marker.

To the definition of chemical composition, chromatographic techniques (TLC, HPTLC, GLC, HPLC) yield good results and are considered the most suitable. However, in the absence of a specific chromatographic method, other methods have to be used: spectrophotometry, colorimetry, gravimetric determinations,etc.

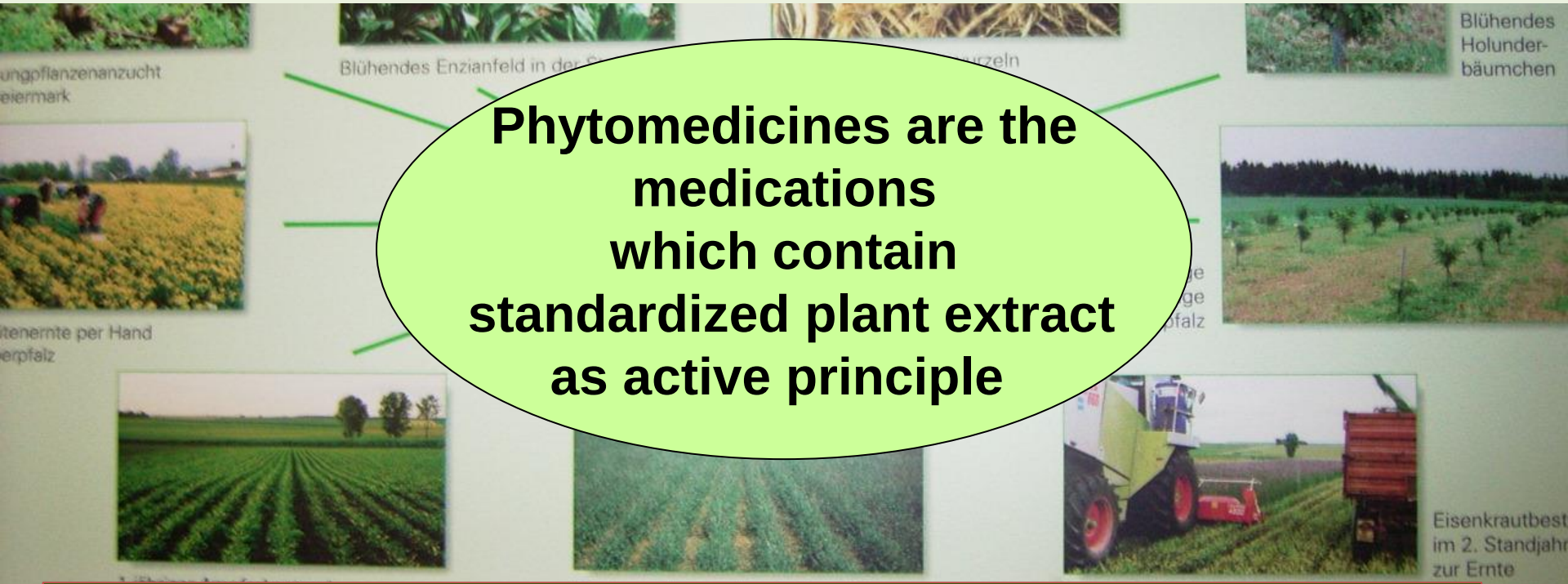
Standardization of Herbal Medicines

A - Standardized herbal material : Correct plant, good agricultural practice,good hervesting practices; correct active principles, correct amount, without contaminations etc. **G**ood **A**gricultural and **H**arvesting **P**ractices (**GAHP**)

B - Standardized exracts are obtained by **G**ood **L**aboratory **P**ractices (**GLP**). Standardized extracts are checked with finger print chromatograms.

C- Producing herbal pharmaceutical products by **G**ood **M**anufacturing **P**ractices (**GMP**)

Phytomedicines
Phytopharmaceutics (EU)
Phytopharmaka(German)
Bitkisel İlaçlar (TR)



Phytomedicines are the medications which contain standardized plant extract as active principle

Medicinal plants are cultivated by good agriculture and collection / harvesting Practices (GACP = GAHP)

The standardized plant exracts are obtained using Good Laboratory Practices (GLP)

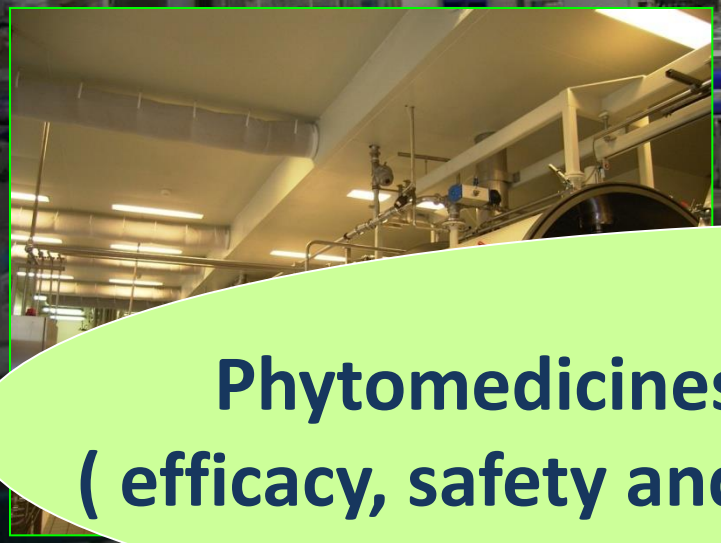
Standardized plant extracts :

It contains pharmacologycally active components in a same amount in a certain gram extract.

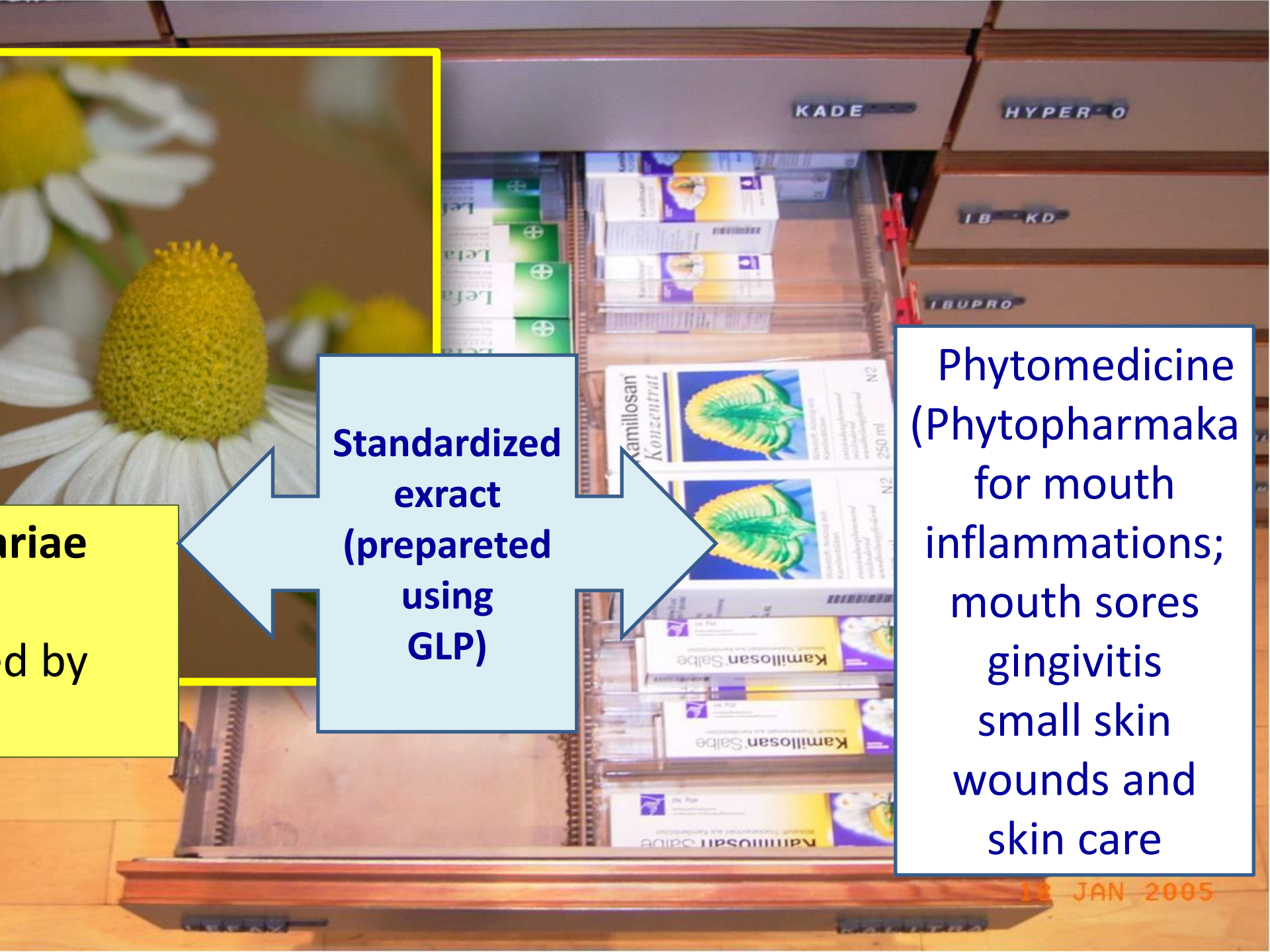
Besides the controlled cultivation(GACP =GAHP)) of herbs and the use of standardized production methods, chemical analysis is necessary to ensure the optimum homogeneity of plant extracts. Plants exracts are analyzed by HPLC ; and «**fingerprint chromatogram**» is obtained for each plant extract.

This applies to the raw materials themselves (dried herbs and extracts) as well as the finish products.

Phytomedicines are produced using good manufacturing practices(GMP)



Phytomedicines have the similar properties (efficacy, safety and dosage) to synthetic medicines


KADE
HYPER O
IB KD
IBUPRO
Kamillosan Konzentrat
Kamillosan Salbe
ariae
d by
Standardized exract (prepareted using GLP)
Phytomedicine (Phytopharmaka for mouth inflammations; mouth sores gingivitis small skin wounds and skin care
JAN 2005

Herbal medicines, before appearing in the pharmacy's as a medicine, should be required to undergo **pharmacological and toxicological testing on animals and clinical trials in humans.** Unfortunately, this is not usually the case. The cost of such an endeavour, especially for products that will not have patent protection, is perhaps the major reason for the lack of research on herbal medicines.

Although approximately 13,000 plants are used therapeutically around the world, **not much have been studied in a systematic way.**
The situation is improving in day by day.

The Herbal Medicines and the Importance of the Scientific Research

Toxicity Studies

Ideally a botanical product should eliminate symptoms of or cure medical disorders and alleviate suffering. Therapeutic dosages should not provoke untoward effects such as gastro-intestinal disturbances, blood pressure changes or cutaneous reactions, nor alter enzymatic reactions. Today, ascertaining the safety of a drug is perhaps more important than as certaining its effectiveness. Acute toxicity should be assessed in animals by determining the maximal tolerated dose. Chronic toxicity can be determined after repeated exposure to the product (3-10 days subacute toxicity, 15-30 days subchronic toxicity, 1 month to 2 years for chronic toxicity).

Toxicity Studies

Prolonged toxicity is determined on the basis of data supplied by daily or periodic observation of some parameters: weight curve, daily food consumption, the animal's general state (appearance, condition of its coat, behavior, muscular tone, pupil diameter, quantity, appearance and consistency of urine and feces), metabolic constants (leukocyte count, hematocrit, Hb, etc.), blood chemistry, and macro- and microscopic examination of the main organs at the end of the treatment period.

Toxicity tests also include teratogenic, and carcinogenic potential and tolerability tests.

Efficacy Studies

The effectiveness and therapeutic application of herbal medicine is the other requirement to be taken into consideration. This requires specific biological tests for every pharmacological action on laboratory animals.

In practice this means studying the effects of the drug on tissues and organs in experimental models of the disease or disorder for which the product is intended. **Preliminary estimates of the therapeutic dose may also be determined in these studies.** However, the evaluation of herbal drugs for medicinal properties is complicated by the presence of multiple components in addition to the active principles.

As a consequence, it is much more difficult to extend the experimental results in animals with botanicals to humans than with conventional drugs.

The chemical complexity of herbal medicines causes multiple effects in humans which must be tested only throughout clinical trials.

When evaluating human studies, additional considerations come into play. It is essential to rule out a placebo effect. This can be accomplished through thoughtful experimental design, specifically using a double-blind, cross-over method.
This makes it possible to minimize the influence of the expectations of patients and physicians.

Efficacy Studies

Anyway, even rigorous randomized clinical trials do not always agree in their conclusions. An example may be the use of feverfew in patients with headache. Some randomized clinical trials suggest that feverfew is more efficacious than placebo in alleviating headache, while other trials show no significant effect. In these cases the matter can be achieved by conducting systematic reviews (which provide a summary of the clinical evidence by assessing individual clinical studies) and meta-analysis. Meta-analysis represents a sub- species of systematic reviews which give data from individual trials and calculate a new overall effect size of a particular outcome measure. **Meta-analysis is a useful, albeit not infallible, approach to assess the efficacy of herbal medicines.**

Germany has a strong tradition in phytotherapy and hence controls are more stringent. The German Commission E *(Komisyon E),* a special committee of the *Bundesgesundheitsamt* (Federal Ministery of Health), is a consulting body appointed by the German equivalent of the USA Food and Drug Administration (FDA).
The German Commission E prepares monographs using historic information, phytochemicals (active principles of the plant), pharmacological, clinical and toxicological studies, case reports, epidemiological data and unpublished manufacturer's data.

Herbal pharmaceutical products which are used for 15 years in the EU, and used for 30 years in non-EU countries can be taken production and sales permission with less clinical trials by EMA (European Medicine Agency).


Talcid
KAUTABLETTEN
Talcid
KAUTABLETTEN
Systral® Gel
Systral® Gel
Tussamag
KAPSELN
Tussamag
KAPSELN
ThermaCare
ThermaCare
Venoruton
Emulgel
VapoRub
VapoRub
Verstopfte
Nase?
Lactulose
AL Sirup
VERSTOPFUNG
VERSTOPFUNG

Acquisition of Crude Drugs

- The date of plant picking and drug preparation (the activity of many drugs ceases after a few months, while others are still usable after 8-12 months, such as some anthraquinone drugs).

- The absence or presence of contaminants indicated in percentages (moulds, microorganisms, pesticides, heavy metals, radionuelides, preservatives, foreign vegetable substances).

Acquisition of Crude Drugs

- The processing method used (dehydration,stabilization). It should never be forgotten that a homogenous and correct drying is often the most delicate and essential phase in the whole process of production of a vegetable drug preparation (extracts, tinctures,etc.).
- The active principle strength.
- The botanical name of the plant, therapeutic information and possible disadvantages (side effects, etc.).
- Information on drug preservation.
- Information about the drug producer.

Crude Drug Preservation

It is essential that crude drugs be well preserved and protected from external and internal agents which could influence their shelf-life, not only the quality of the storage conditions but also the stability of active principles.

Among the most important factors having a harmful effect on drugs are:

1-Physical (light and heat);

Crude drugs sensitive to light should therefore be stored in containers, which prevent the infiltration of light rays (terra-cotta, elay and wood containers,etc.).

Crude drugs sensitive to heat ,which encourages mould and bacteria growth, should be stored away from heat sources such as radiators and stoves,etc.

2-Chemical (atmospheric oxygen and humidity); Crude drugs sensitive to humidity should be stored in hermetically sealed containers. This is valid, for example, for marshmallow, mullein and opium poppy

Crude drugs sensitive to atmospheric oxygen should be stored in hermetically sealed containers thus preventing any contact with air.

3-Biological (moulds, insects).

4-Among the internal agents are enzymes, although in some cases enzymatic activity is useful because it stimulates the formation of therapeutically useful substances..

Storage places should be kept cool, dry and well aerated. Hygroscopic substances (drying agents) should be placed both in the containers and storage places in order to keep local humidity low.

If these rules are respected the risk of drug alteration - changes in color, taste, smell and consistency - and the presence of mould, all of which can be detrimental to the drug, can be avoided.

Color change is caused by exposure to direct or indirect light and humidity. Direct or indirect light mainly alters the leaves and flowers causing rapid discoloration and yellowing, giving the crude drug the appearance of a decidedly inferior quality.

Light also affects other types of crude drugs such as the stigmas of *Crocus sativus* (saffarin) and the bark of *Cinnamomum zeylanicum* (cinnamon), producing reddish marks in the latter.

The smell caused by humidity and heat can become unpleasant as in the case of *Althaea officinalis* (marshmallow), ammoniacal a s *Claviceps purpura* (ergot), or not to mention the characteristic smell of mould due to the presence of mycetes.

These and other microorganisms are responsible for the change in taste.

Humidity affects drug consistency - roots, tubers, wood, rhizomes, bark, seeds and bulbs are easily softened if not stored in a completely dry environment.

Periodic control is essential to check the preservation state and thus enabling immediate removal of the affected parts. Such checks reduce the risk of losing whole quantities of the plant drug and above all of using affected parts which could be harmful to the patient. **Even if stored correctly, a drug progressively loses its strength with the passing of time.**

At the moment of picking a drug contains a large quantity of water, very many enzymes and chemical substances, apart from pharmacologically active substances, and their activity continues despite the dehydration process.

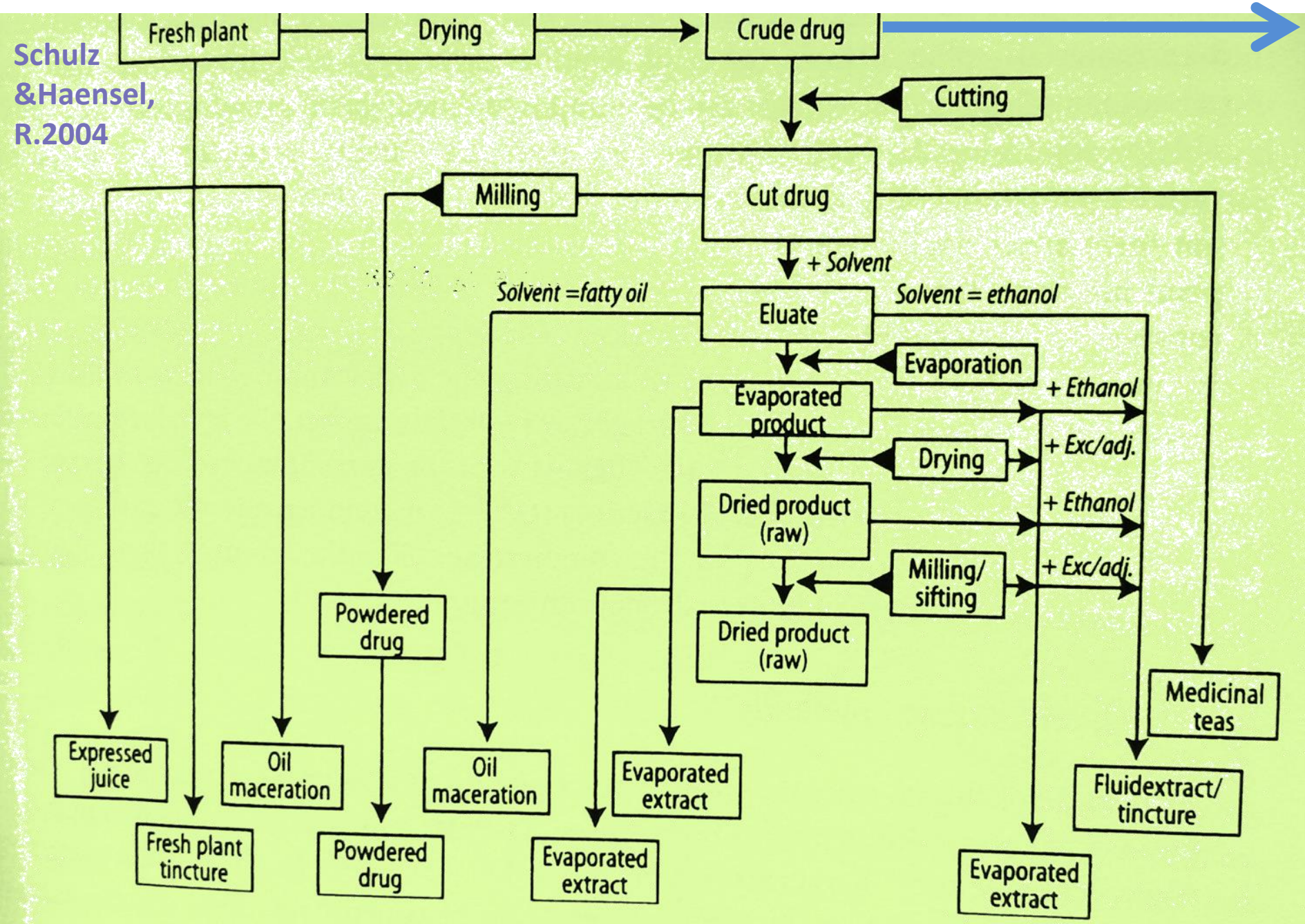
The most important of these activities is hydrolysis, which can change or weaken the active components.

Thus careful preservation does not avoid but only delays this inevitable ageing process and progressive drug inactivation.

For these reasons batches of botanical drugs should undergo periodic evaluation for the presence of microorganisms and potency of the active component(s).

Technical processes involved in the production of herbal medicines

Schulz &Haensel, R.2004



Fresh and Dried Botanical Drugs

Plant-derived drugs can be used either in fresh or dry states. The section Vegetable Drugs and Preparations of the Italian Pharmacopoeia (FU) states that unless a limit is fixed, dried drugs should not contain more than 10% humidity.

The use of fresh drugs, theoretically the ideal, causes practical problems in the manufacturing process.

There are cases in which enzymatic transformation is necessary before the drug can be used.Fresh drugs are used for Mother tinctures; they are preferable in the preparation of pulps, **juices** and especially essential oils.

Dried drugs are used in the preparation of powders, infusions, decoctions, extracts and tinctures.
They offer advantages such as ease of availability throughout the year, ease of transport and preservation, better stabilization and preservation.

Dried drugs are also referred to as"raw drugs"which means that the drug has only been dried and stabilized.

Gangolf Apotheke

Cranberry juice

The dried drug used in extractive and tincture preparations must be moistened before use with the extractive solvent, the so-called "menstrum", and left to soften for a period varying from half an hour to several days according to the nature of the drug, the solvent employed and the type of preparation.

"Softening« (maceration) is an extractive process carried out at room temperature *(when carried out in gentle heat it is called "digestion"),* permitting the solvent to penetrate the plant cellular structure and solubilize the active principles.

Steeping is carried out in glass, enamel-coated iron or china (porcelain) containers, provided with a suitable lid and stirred from time to time.

After filtration the resulting extract can be drunk either cold or warm. This preparation is suitable for mucilages and when one wishes to avoid the extraction of useless substances, toxic substances such as viscotoxin, gentian pectin, or thermolabile active principles (e.g. devil's claw iridoids).

Steeping is almost never exhaustive, usually constituting a pre-liminary operation followed by percolation leading to drug depletion.

The whole extraction process depends on the degree of drug fragmentation being facilitated and ions more thorough if solvent action is not hindered by cellular walls.

The choice of extractive solvent is therefore of paramount importance to provide efficient extraction of the active principle(s) and elimination of the unwanted components, without compromising the intended pharmacological activity.

The extractive processes and the solvents which obtain the best results for most botanical drugs are now well known.

When extraction is carried out with water, it can be more convenient to remove fatty substances and waxes by preliminary washing with hexane, petroleum ether or dichloromethane; when using water as a menstruum, the addition of a preservative is necessary to reduce bacterial contamination and prevent mould formation.

Powders

These are the oldest form of botanical drug administration. They are obtained by trituration of the dried drug, the size varying, depending on the method used. The powder is sieved to obtain homogeneous granules and is graded depending on the sieves used from very coarse, coarse, semi-fine, fine and very fine (micronized powder).

Powders are classified as simple (consisting of only one drug), or compound when mixed with powders from other drugs. Powders from the whole plant can be administered suspended or dissolved in water or another liquid, mixed with honey, as a tablet, pill or capsule form. Hard gelatin capsules are preferable when the powder has an unpleasant taste or smell, or when the preparation is mucilaginous.

The bitter taste is thought by some to be important to stimulate biliary secretion, release insulin and gastric hormones.

Such a preparation is therefore useful in the treatment o f digestive and liver disorders, diabetes, and even other ailments.

In France a pulverizing technique has been perfected called cryofractionation, to obtain a product as similar as possible to the composition of the medicinal plant. This technique works by injecting liquid nitrogen at -196°C into the pulverizer.

Infusions and Decoctions

Unlike other galenic formulations these are extemporaneous preparations obtained from previously prepared drugs. Infusions are liquid preparations obtained by pouring warm or boiling water over the plant material.

This is the manner in which medicinal and non-medicinal "tea"is also prepared ; flavors and any nutrients or pharmacological agents are thus extracted prior to ingestion.

The extent of extraction usually depends upon the length of time the material is exposed to the extraction fluid.

Infusions and Decoctions

After cooling the resulting solution can be filtered through cotton wool or gauze and the eluent is then brought up to the prescribed weight by adding hot water (the residue and filter should be washed to recover as much drug as possible).

In some cases it may be necessary to add small quantities of acid or alkaline substances to the solvent to facilitate active principle extraction.

Generally 1-10 parts of drug are needed for the preparation of 100 parts of infusion.

Infusions and Decoctions

Infusion is used when the drug is composed of tender or delicate tissues such as leaves and flowers and other upper parts of the plant. Often the infusion technique does not permit the extraction of substances with little solubility in water. For example, only 10-15% of chamomile oil passes into the infusion even after prolonged extraction time.

Clearly the preparation of a pleasant infusion like tea to be drunk with friends or during a work break is one thing and a therapeutic infusion is another.

In the latter case it is necessary to define the quantity of drug relative to water (usually 3-5 parts for 100 parts infusion), the duration of infusion,and the appropriate extraction containers (for example aluminium containers should be avoided).

In many cases, however, therapeutic effectiveness (and therefore potential drug toxicity) is modest; this ,plus the fact that active principles are rather diluted does not permit precise control of dosage.

Decoctions are liquid preparations obtained extemporaneously by boiling in water the suitably pulverised drug from which the active principles are to be obtained.

This operation is never applied to volatile active principle drugs. Usually 5 parts of drug are used to prepare 100 parts of decoction; in the case of drugs containing alkaloids, water is added to promote extraction.

A quantity of diluted citric acid corresponding approximately to the total alkaloid content of the drug maybe added to improve extraction.

Decoction is used when drugs are composed of not very permeable compact tissues which release active principles with difficulty (e.g.wood,bark,roots,seeds,etc.) andi s often preceded by steeping in cold water for some hours. Boiling varies from 15-45 minutes depending on the physical characteristics of the material to be extracted. There are of course exceptions as in the case of lichen or barley where the drug is first boiled and then the liquid is substituted before undergoing the final decoction.

. Decoctions are never used when drugs to be extractedare known to be thermolabile (e.g. foxglove). Decoctions are often cloudy due to the presence of mucilages which can be extract- ed by boiling, and precipitate upon cooling.
Few decoctions are used today because the protracted boiling inactivates alkaloid or heterocyclic molecules, causing loss of activity or conversion to substances with undesirable effects

Before using botanical drugs as "mono-therapy" or in combination with other pharmaceuticals, one must accurately diagnose the patient's illness.

It may be most appropriate to combine herbal medicines with conventional drugs to improve the benefits to the patient.

Such combinations may permit the use of a lower dose of the synthetic drug, thus reducing side effects and minimising the potential for iatrogenic illness. Another indirect "benefit" from the use of plant-derived drugs is their value as a source of nutrients (vitamins, protein, fiber, enzyme content).

Phytotherapy is a kind of complemantary treatment.

Phytotherapy is a kind of complemantary treatment.

Other complemantary treatment methods which releated with medicinal plants and herbal products :

AROMATHERAPY (treatment with volatile oils and aromatic plants)

APITHERAPY (treatment with bee products : honey,propolis,polen and royal jel)

Herbal Pharmaceutical Products

Herbal Medicinal Products

Herbal Medicine (USA)

Medicinal Teas
Tıbbi Çay (TR)

Medicinal Oils
Volatile oils
(Aromatherapeutics)
(Fixed Oil,Fatty Oils)
Bitkisel Yağlar (TR)

Phytomedicines (EU)
Phytopharmaka(German)
Bitkisel İlaç (TR)

03.3.2015

Berlin

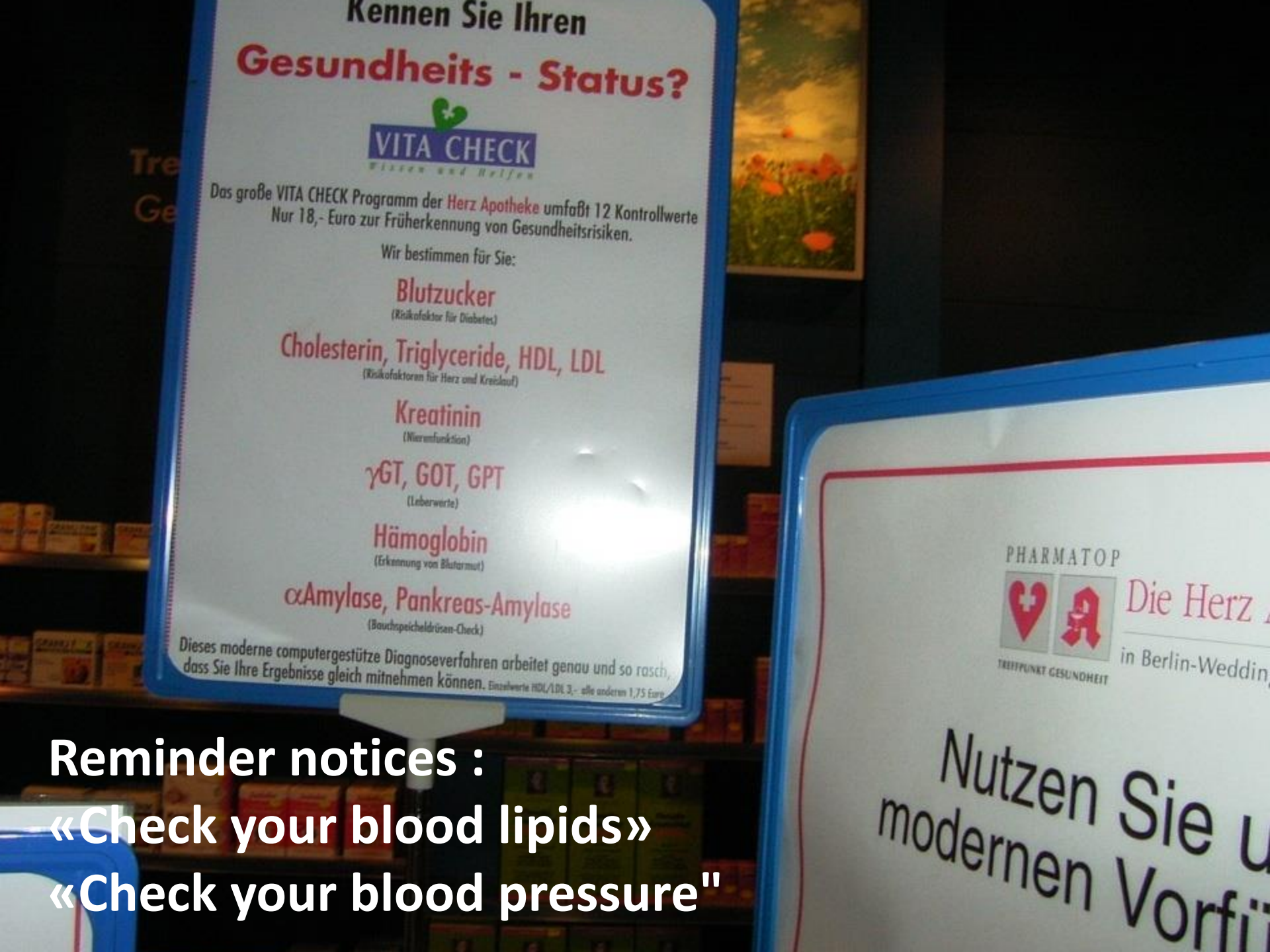

DIE HERZ
APOTHEKE
DIE HERZ
APOTHEKE
DIE HERZ


DIE HERZ APOTHEKE

SANDDORN
CREME
regeneriert gestresste Haut
hilft zum Erhalt der Sonnenbräune
27 MAR 2006

Medicinal plants pictures for decoration


Nutzen Sie unsere
modernen Vorführgeräte
für Ihre persönliche Blutdruck-Kontrolle
Rufen Sie uns, wir helfen Ihnen gerne dabei!
AUSGANG
Ricola
Salbei



Reminder notices :
«Check your blood lipids»
«Check your blood pressure"


condomi
Plaque Check
Zahnbelag?
Treffpunkt
Treffpunkt
meridol
meridol
meridol
elmex
elmex
elmex
meridol
meridol
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elmex
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elmex


WELEDA
Sanddorn-Handcreme
aufbauende intensivpflege
WELEDA
Haaröl
pflegt trockene sprödes Haar
Olivenöl Intensivcreme
mit Retinol + Vitamin E
Für die Aufbaupflege
Olivenöl Gesichtspflege
Bei trockener und empfindlicher Haut
Oliven Augen Contour Gel
Mildert Augenfältchen Beruhigt & kühlt
Olivenöl Pflege-Shampoo
Bei trockenem und strapaziertem Haar
200 ml
Olivenöl Intensiv Pflege-Kur
100 ml
MIT WERTVOLLEN MINERALIEN AUS DEM TOTEN MEER PLUS Q10
MURNAUERS
TOTES MEER
Q10 ANTI-FALTEN
NACHTCREME


Visine
GRANU FINK
Kwai
China Oel
Haut & Haare


MediNait
DayMed
Bronchicum
Elixir S
VapoRub
Silomat
PROSPAN
Leber- und Gallentee N
SIDROGA
Schlaf- und Nerventee N
27 MÄR 2006


VICHY
NOVADIOL
TAG + NACHT
REDERMIC
Olivenöl
Schönheits-Hautkapseln
Olivenöl
Körperbutter
Avène
27 MÄR 2006

Medicinal teas


medicine cabinets
VIBTAC
VIANI
VIBROC
VIGANT
WOBENZ
VIOXX
VIRUDE
VITAGU
XAGRID
VITAMI
XELODA
VITAVE
XYLOCA
WICK
WICK
WICK


FERROF
FUROSE
GRUENL
HYDROC
FERROS
FUROSE
GYNOKA
HYGROT
FINALG
GABUNA
HAEMOE
IBU/ABZ
1A PH./BETA
FLAMMA
IBU
IBUFLA
GeloBronchial®
Saft
GeloMyrtol®
forte
27 MÄR 2006

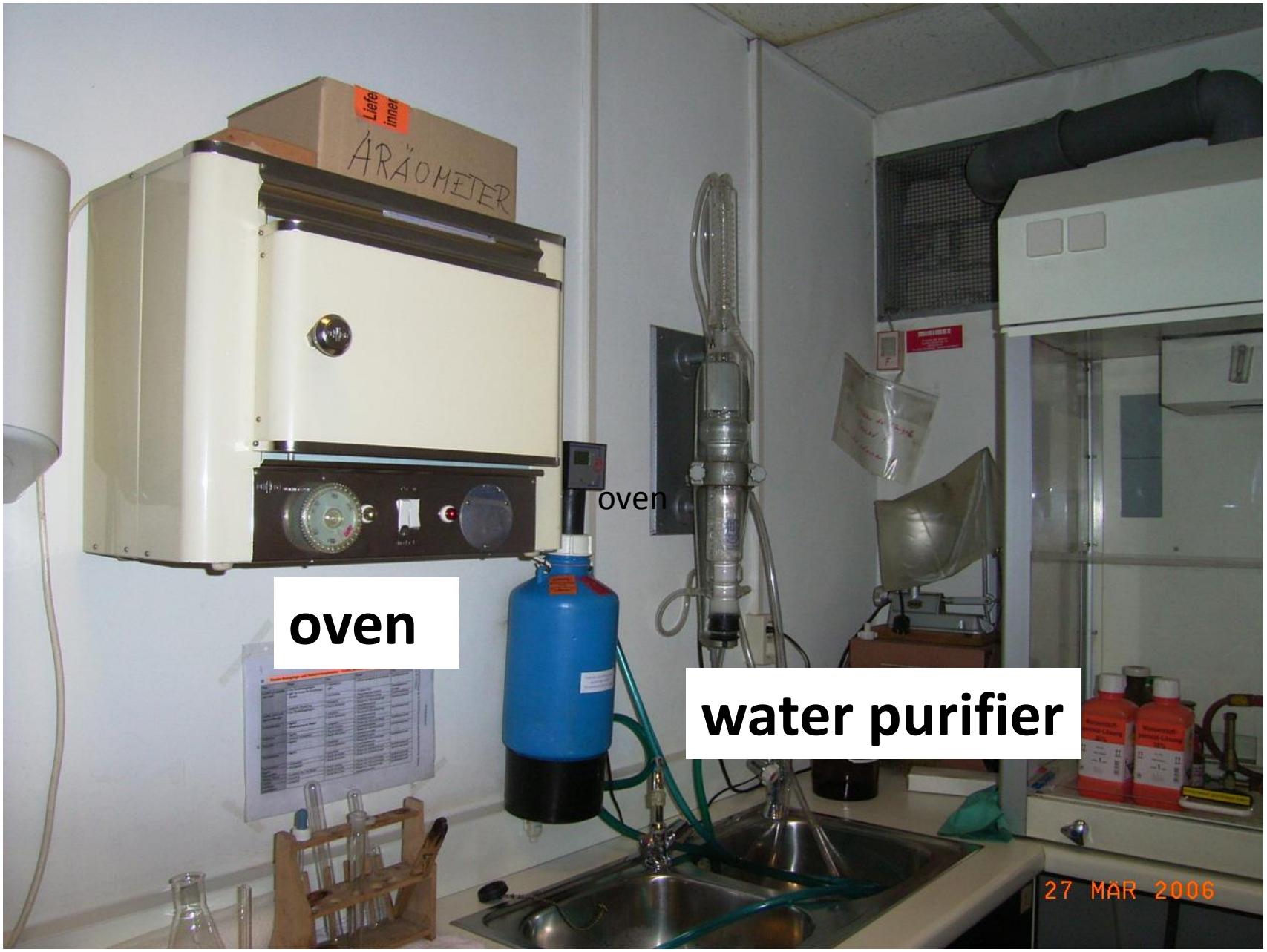
Myrtus communis

Mersin (murt)

Hedera helix

Duvar sarmaşığı


fume hood
27 MAR 2006


ÄRÄOMETER
oven
oven
water purifier
27 MAR 2006


weighers
27 MAR 2006


APOTHEKE
Morris
APOTHEKE
startklar
ASPIRIN COMPLEX
Befreit durch den Frühling.
Morris
19 MAR 2010

Medicinal teas

Vienna, Austria


Pharmacie
Phytothérapie Homéopathie Aromathérapie
PHARMACIE CASETTA
PHARMACIE
Casetta
PHARMACIE
Homéopathie
Point
FICH
FICHET
Sôlutions
liberté
F Lefebvre
Centre Sécurité
20 55 02 22

Fransa

APT. FEVERY-DEWITTE
ZUIDZANDSTRAAT 1 8000 BRUGGE
050.33.34.44 050.34.69.02
???
10/06/2008
Arts : ???
SOR-TROPOLOX 950MG 40 TABL

4 times daily 1 tablet

TROPOLOX

40 tabletten

oedingssupplement

Oostindische kers - Origanum - Tijm
Den - Marjolein - Rozemarijn - Lavendel

Formerly brain tonic :Coca Cola

Coca Cola Museum- Atlanta

USA

USA

FDA(Food And **D**rug **A**dministration

Complementary and **A**lternative **M**edicine **(CAM)**

National **C**enter for **C**omplementary and **A**lternative **M**edicine **(NCCAM)**

Hudssons Pharmacy is famous with its icecream in State of Georgia

Chain Pharmacies

Philadelphia


Dietary supplement
Store;
Phoenix
Vitamine Shop
GNC
Ginger Aid
Golden Green Tea
Think-O
Herba Tussin
Organic Peppermint
Weightless Cranberry
Celestial Seasonings
Tension Tamer
Ginger Tea
Ginseng
Green Tea
Lemon Ginger Tea
Throat Comfort Tea
Select

Rusya-Moskova, Arbat, Trafiğe Kapalı Kültür Caddesi

Moscow


104,62
385,71
Dandelio
ent Night
3102,75
Irwin Natu
ИНОЛТР
НАТУРАЛЬНО
средство
90
INHOLTRA

Batum (Georgia ,Gürcistan)


Pampers
Pampers
HUGGIES
HUGGIES
Pampers
პამპერსი
always


HUGGIES
3-6kg
Нова Фигура
ACHILLEA MILLEFOLIUM
ЦИКОРИЙ

Kazakhistan

You have to learn particularly from this lecture

- **Phytotherapy, phytomedicine and synonyms.**
- **Cultivation of the medicinal plants**
- Technical processes involved in the production of herbal medicines
- **Herbal Pharmacopoeia**
- **The Complexity of Herbal Products**
- **Are the Herbal Medicines Safe ?**
- Adverse effects,interactions with other plants and synthetic medications.
- **Standardization of Herbal Medicines**
- **Toxicity Studies, Efficacy Studies**
- **Acquisition of Crude Drugs**
- **Crude Drug Preservation**
- **Fresh and Dried Botanical Drugs, Powders**
- **Infusions and Decoctions, Decoctions**
- **Phytotherapy in Eu and USA**

Next week
Medicinal teas