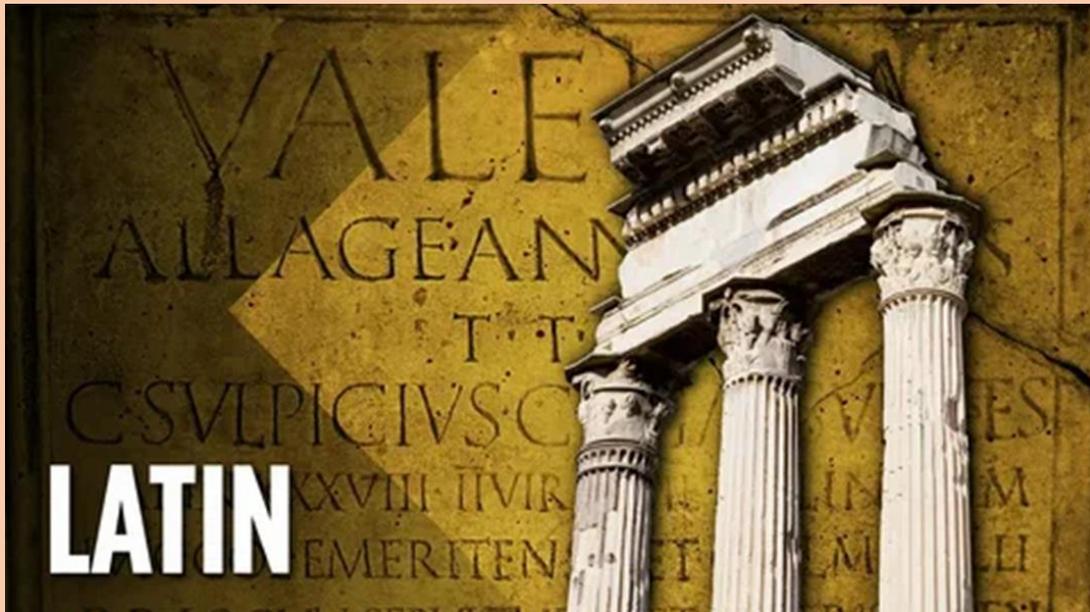


Basics of botanical terminology

Methods of preparation of Herbarium Specimens



Pharmacopoeia

- A pharmacopoeia, pharmacopeia, or pharmacopoea (meaning "drug-making"), in its modern technical sense, is a book containing directions for the identification of compound medicines, and published by the authority of a government or a medical or pharmaceutical society.



Scientific names

- At the simplest level of scientific classification, each plant has a name made up of two parts, a **generic** (or **genus**) name and a **specific** name or **epithet**. Together, these two names are referred to as a **binomial**.
- A **generic** name is a 'collective name' for a group of plants. It indicates a grouping of organisms that all share a suite of similar characters. The specific name, allows us to distinguish between different organisms within a genus.

Naming the plant

- The name of a plant is based on an **original description**. **Linnaeus** published his concept of the binomial naming system.
- In the taxonomy of Linnaeus there are three kingdoms, divided into *classes*, and they, in turn, into *orders*, *genera* and *species*
- The person making this original description in a published journal or book is called the '**author**' for that plant name, and their name follows the genus and species in a full citation, for example:



Salvia officinalis L



Adonis vernalis L



Taraxacum officinale Wigg.



Salvia occidentalis Sw.



Helichrysum plicatum DC.



Digitalis purpurea L

Flowers: The flowers of plants have always been popular in traditional medicine. Examples include clove flowers.

Fruit: Fruits have been heavily used for medicinal purposes. Dried whole fruits or portions of fruits can be used. Many members of the carrot family have fruits that are used in medicine including fennel fruit and anise.

Leaf: The leaves of plants, shrubs, and trees can be used for medicinal properties. Leaves can be used alone or can be mixed with stems, and buds.

Roots: The fleshy or woody roots are used for medicinal purposes.

Rhizome: Rhizomes often produce leaves above the ground and roots into the ground.

Seed: The seeds of many plants are used for their medicinal properties. Seeds may be contained within a fruit or are sometimes used on their own.



▪ ***Folia Belladonnae***

folia (noun II decl, n, Nom. Plur.)

Belladonnae (noun, I decl, f, Gen. Sing.)



▪ ***Folia Plantaginis majoris***

folia (noun II decl, n, Nom. Plur.)

Plantaginis (noun III decl, f, Gen. Sing.)

majoris (adj. III decl, f Gen., Sing.)



▪▪ ***Herba Althaeae officinalis***

herba (noun. I decl, f, Nom. Sing.)

Althaeae (noun. I decl, f, Gen. Sing.)

officinalis (adj. III decl, f, Nom. Sing.)



Cortex Frangulae

cortex (noun. III decl, m., Nom. Sing.)

Frangulae (noun. I decl, f, Gen. Sing.)



Pharmaceutical herbal preparations

Pharmaceutical herbal preparations have been used for the treatment of respiratory diseases for a long time.



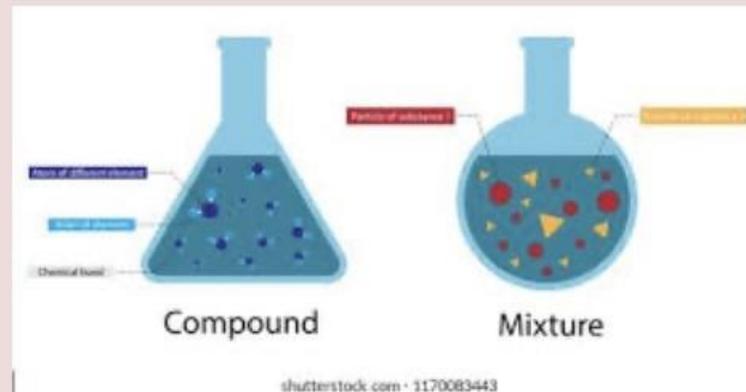
Tincture

- A **tincture** is typically an extract of plant or animal material dissolved in ethanol (ethyl alcohol). Solvent concentrations of 25–60% are common, but may run as high as 90%. In chemistry, a tincture is a solution that has ethanol as its solvent. In herbal medicine, alcoholic tinctures are made with various ethanol concentrations, which should be at least 20% alcohol for preservation purposes.



Mixture

- In chemistry, a **mixture** is a material made up of two or more different chemical substances which are not chemically bonded. A mixture is the physical combination of two or more substances in which the identities are retained and are mixed in the form of solutions, suspensions and colloids.



Decoction

- **Decoction** is a method of extraction by boiling herbal or plant material (which may include stems, roots, bark and rhizomes) to dissolve the chemicals of the material.



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Infusion

- **Infusion** is the process of extracting chemical compounds or flavors from plant material in a solvent such as water, oil or alcohol, by allowing the material to remain suspended in the solvent over time (a process often called steeping). An **infusion** is also the name for the resultant liquid.



Extract

- Plant extraction is a process that aims to extract certain components present in plants. It is a solid/liquid separation operation: a solid object (the plant) is placed in contact with a fluid (the solvent). The plant components of interest are then solubilised and contained within the solvent.



HERBARIUM

- A **herbarium** is a collection of plant samples with associated data preserved for long-term study. These materials may include pressed and mounted plants, seeds, dry fruits, wood sections, pollen, microscope slides, silica-stored materials, and fluid-preserved flowers or fruits; all are generally referred to as **herbarium specimens**.
- The making of herbaria is an age-old phenomenon. The oldest traditions of making herbarium collections or *Horti sicci* have been traced to Italy. Luca Ghini and his students created herbaria of which the oldest extant one is that of Gherardo Cibo from around 1532.



Equipment

- **For collecting**
- Plastic bags
- Tape measure
- Secateurs
- Labels/sticky notes
- Pens/pencils
- Camera



Equipment

- **For pressing**
- Two pieces of hardboard/plywood measuring approximately 40 x 30cm (16 x 12in)
- Sheets of blotting paper
- Sheets of corrugated card
- Foam sheet
- Bricks/telephone directories/weighty books/straps

Equipment

- **For mounting**
- Acid-free paper measuring 42 x 26.5cm/ A3
- Labels, preferably acid-free
- Tweezers
- Scissors
- Neutral-pH PVA adhesive
- Neutral-pH adhesive, gummed linen hanging tape

Equipment

- **For storage**
- Plastic bags
- Freezer
- Boxes



Step-by-step

1. Collecting: Select a typical plant and if possible two or three extra flowers to supplement the specimen and for dissection. Ensure the plant is healthy and collect average-sized leaves and flowers typical of the plant, not the biggest. Remove soil from the material. Photograph the plant habit and a close-up. Avoid collecting material in wet weather

2. Describing: When collecting, attach a label to the specimen recording: name of plant, date of collection, collector, site of collection and original source of plant. Note other details that may be lost by pressing: overall size, habit and form, leaf or flower scent.

3. Pressing

Cover the sample with two further sheets of blotting paper and corrugated card. With both bulky and fleshy specimens, add a sheet of foam between the blotting paper and corrugated card. Any absorbent fabric may be useful in drawing out moisture; if using, place it on top of the plant material, with a thin sheet of paper between the plant material and the fabric to prevent sticking.

Once all samples have been laid out, cover with the top board and place bricks or a heavy object on top, applying pressure evenly throughout, or use straps to keep the press tight. Move to a warm place, such as a drying cabinet, airing cupboard or damp-free room above a radiator.

Inspect the material 24 hours later, replacing the corrugated card and top layer of blotting paper with dry card. This is your last chance to rearrange the sample while the plant material is still moist and pliable. Inspect regularly - at least once a week. Depending on the plant being pressed and the drying conditions, a dry specimen will be ready anywhere between two days or three weeks.

4. Mounting

The RHS Herbarium uses acid-free paper, measuring 419 x 266mm (16.5 x 11in). Good-quality A4 paper, preferably acid-free, is sufficient for the needs of a domestic herbarium, but if one day you might donate your sample consider the advantages of a larger format.

Attach the specimen to the paper using a combination of neutral- pH PVA adhesive and gummed linen hanging tape. The label should include the plant name and author, plant family, description, location, date, collector and any other relevant details. The label should be placed on the bottom right-hand corner.

5. Storage and conservation

Place the prepared specimen in a sealed plastic bag and freeze for 72 hours. Ideally the temperature should be -32°C (-26°F) although most domestic freezers have a minimum of -18°C (0°F). Freezing is the only method to combat pests. The most common pest of the herbarium specimen is the biscuit beetle, *Stegobium paniceum*. Regular freezing (every six months) is recommended, as is regular inspection to check for infestation and damage.