

1-Collecting of medicinal plants after harvesting الحصاد:

Medicinal plant that are harvested must be collected and the active parts(leafs, roots, flowers. Etc.) must be isolated and protected from the dust, rain, moisture and rodents القوارض .

During the primary collection stage all medicinal plant material must be inspected يتم فحصها. The products with low quality or foreign matter must be removed mechanically or by hand. Collection is usually followed by cleaning with water and chlorine and stored in a plastic container. Collections some time occurs manually or by using the machines

For aromatic plants النباتات العطرية, the collection must be followed by refrigeration (2-8 °C) and kept under vacuum to prolong the expiration date. Sometime freezing(0°C) is used to elongate the expiration date to more than 1-2 years

The collection steps are :

- 1-Separate a part of the plant that is needed
- 2-Remove the remains of ground or stones
- 3-Homogenize the size (granulometry).
- 4-Cut the materials in to small particles.
- 5-Mix different cut or powdered plants in one container

2-Drying

Drying consists of reducing the water content of fresh produce, usually up to a ranging from 5-13%, or below. The aim is to conserve to more than 3 years in good condition. Depending on how the drying process is performed, there may be a decrease in essential oils, and therefore a reduction in aroma or the active ingredients. Thus, this is a method that is usually used for medicinal plants and some aromatic (rosemary زهرة الكليل الجبل, etc...). The content of other active ingredients can also be reduced depending on the method.

Methods for drying:

1-Natural drying 2-in the shadow 3-solar تحت الشمس.

Industrial techniques that require powerful:

1-Drying forced by convection التجفيف الحراري 2-Lyophilisation 3-Osmotic dehydration 4-Microwave irradiation

Factors involved in drying are:

- temperature. Between 35-40°C.
- time. Natural conditions it takes 1 week. By convection it can take around 3 days.
- humidity of the drying air. The lower humidity of the air, the faster the drying.
- Water content of the material to be dried. In general, initial moisture values range from 60 to 80%, but some flowers may contain 95% water.
- The active materials of plants.
- The part of the plant.

Drying is done by the circulation of hot air or by convection.

A forced hot air dryer consists of the following elements:

- Fan.
- Air distributors.
- Source of heat.
- Temperature control systems to maintain constant temperature to control the drying time, in addition to a hygrometer مقياس رطوبة to know the humidity of the dryer.

3-Packaging

Packaging is the process of introducing final product into a container that protects or isolates from the light, moisture, or contamination

4- Labelling

Labeling is the action of placing a label on a container of a raw material. It contains information that defines the specific product, species of the plant and others. Each type of product (food, cosmetic, medicine, ...) or raw material has different regulatory requirements as regards the information that the label must contain.

Labels should contain :

- Latin name of plants.
- Part used (seed, flowers etc.)..
- Batch Number.
- place and date of collection.
- Expiration date.
- Net weight.

5-Storage

Consists of storing the raw materials and final products in a suitable container with reduced possibilities of degradation. Factors affecting the quality of a raw material or herbal product during storage are as follows:

Protection against light, Low temperature, Low humidity, Suitable packaging type, The size of the crushed.

Questions:

1-what is the first step after harvesting? 2-how to collect aromatic plants 3-talk about collection steps 4- define drying, Packaging, collection, labeling and storage 5-what are the Methods for drying 6-Factors involved in drying are? 7- hot air dryer consists of the following elements?8-what information that should be written in the label before shipment?