

KROK-2 QUESTIONS

TERPENOIDS

- Iridoids
- Essential oil
- Saponins
- Cardiac glycosides



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What group of the biologically active compounds was first named “**pseudoindicans**” due to their ability to form the dark blue colour in concentrated acids?

A* Iridoids

B Lignans

C Xanthones

D Coumarins

E Flavonoids

To determine composition of biological active compounds **Trim-Hill's reagent** (mixture of acetic acid, concentrated HCl and 0,2 % copper sulfate water solution) was added to the common snowball (**high cranberry**) bark infuse. Solution became **blue**, and then purple-black sediment appeared that confirmed presence of:

A* Iridoids

B Anthracene derivatives

C Saponins

D Flavonoids

E Tannins

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Quality of medicinal raw material is determined organoleptically according to **bitterness** value because of insufficient research.

The bitter taste indicates the presence of:

A* Iridoids (bitters)

B Glycosides

C Polysaccharides

D Lipids

E Alkaloids

Gentian contains **bitter** glycosides. What biological action do medicines from Gentian have?

A* Appetite stimulation

B Tonic

C Diuretic

D Hepatoprotective

E Venotonic

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A pharmacy collects the medicinal raw material, which contains **bitters** to increase gastric juice secretion. What plant is not permitted because it is included in the **Red book of Ukraine**?

A* Gentiana lutea L.

B Acorus calamus L.

C Artemisia absinthium L.

D Achillea millefolium L.

E Tanacetum vulgare L.

Medicinal raw material which contains **bitters** is used for appetite stimulation. The source of these substances is:

A* Radix Gentianae

B Radix

Ipecacuanhae

C Radix Rhodiolae

D Radix Belladonnae

E Radix Althaeae

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What medical plant from the listed below can be used with medical purpose (for the appetite improvement)?

A* Common dandelion

B Red-seeded dandelion

C White-flowering dandelion

D Japanese dandelion

E Chinese dandelion

Phytochemicals from valerian roots and rhizomes are used as **sedatives** because of the content of:

A* Valepotriates

B Anethol

C Cineol

D Linalool

E Eugenol

Pharmacological activity of **valerian rhizomes** and roots depends on the content of biological active compounds, maximum of which accumulates:

A* In autumn, by the end of vegetation

B In summer, during flowering time

C In summer, before flowering time

D In winter

E At the end of summer, at the beginning of fruitage

The herbal raw material of **valerian rhizome and roots** is collected in a phase of:

A* Dying out of aerial part

B Budding

C At the beginning of blossoming

D Complete blossoming

E Fruiting

A party of **valerian** rhizomes and roots entered to a pharmacy. In which case medicinal herbal drugs are **rejected** without the following analysis:

A* Presence of poisonous admixtures

B Presence of mineral admixtures

C Absence of marking in obedience to Pharmacopoeia

D Damage of container and moistening of herbal drug

E Infection by barn wreckers the I degree

Pharmaceutical laboratory received **valerian** rhizomes and roots (*Valeriana officinalis*) for analysis. In which case this herbal drug may be **rejected** as defective:

A* Due to toxic component content

B Due to mineral content

C Due to the absence of the label

D Due to the damage of the package

E Contaminated by storehouse insects

Drugs of common **valerian** are used as a sedative. The main feature to **distinguish** a common valerian from admixtures is:

- A* Specific odor**
- B** Without specific odor
- C** Specific taste
- D** Specific color of raw material
- E** Remains of stem

Personnel collects herbal raw material of common **valerian**. What morphological **part** of plant is used in medicine?

- A* Rhizomes and roots**
- B** Roots
- C** Herb
- D** Seeds
- E** Inflorescences

Creeping thyme herb is harvested in Ukraine.

Specify the term of harvesting of raw material.

A* During blossoming

B Before blossoming

C Before formation of unripe fruit

D During fruit period

E After harvesting fruit

Yarrow herb is harvested in the certain phase of vegetation.

Specify the phase:

A* During the mass flowering

B Before the flowering

C During formation of stems

D During the fruiting

E During the flower bud formation

Motherwort herb

(Wormwood herb) is a famous sedative and hypotensive agent and should be **collected**:

A* In flowering time

B In autumn after frosts

C In autumn before frosts

D In the phase of stem forming

E After ripening of seed and dying of herbal part

Arnica flowers are used as a haemostatic agent for treatment of injuries. Procurement of this raw material is held:

A* At the beginning of flowering

B During the bud period

C During the flowering period

D In the second period of the flowering

E Harvesting of flowers and fruits is allowed

In accordance with GMP the **underground organs** of medical plants should be **collected**:

A* After ripening of seed and dying of herbal part

B In the phase of flowering

C In the phase of fruitage

D In the phase of bud- forming

E In the phase of stem forming

Underground organs of elecampane are collected:

A* After ripening of seeds and disappearing of aerial part

B In the phase of blossoming

C At the time of unripe fruiting

D In the phase of bud

E In the phase of stem formation

The **birch leaves** are collected:

A* In spring (April-May)

B In early spring (March-April)

C In mid-summer (July)

D In late summer (August)

E In early summer (June)

Pharmacy received a plan to harvest **birch buds**. In which stage of vegetation the harvesting of raw materials should be held:

A* Before blossoming of buds

B During the sap

C In winter

D In autumn

E In summer

Pot marjoram herb is collected at a period of full blossoming.

Choose the collection method:

A* The herb is cut by a knife or sickle at 20-30 cm from the soil

B Dig up all plant

C Pick leaves and stalks

D Pull whole plant with root

E Cut only top of inflorescence

Herbal raw material should be collected in a proper phytocoenosis. Herbal raw material of what medicinal plants can be collected at **banks of the rivers, lakes and bogs?**

A* Sedge cane (sweet flag)

B Bearberry

C Knotgrass

D Creeping thyme (wild thyme)

E Pansy

To get **eucalyptus** essential oil from the leaf it is better to use cut plant material, because essential oil is contained in:

A* Essential oil passages

B Essential oil glands

C Essential oil-tubes

D Essential oil motions

E Parenchymal cells

It's better to use the cut raw material for extracting essential oils from the **eucalyptus** leaves because the essential oil is placed in:

A* Essential oil receptacles

B Essential oil glands

C Essential oil channel

D Essential oil tubules

E Parenchyma cells

Rose essential oil is used as an anti-inflammatory and spasmolytic remedy. Which excretory formations it is located in?

- A* Glandular spots**
- B** Essential oil glands
- C** Essential oil receptacles
- B** Secretory cells
- E** Glandular hairs

To get **peppermint** volatile oil from the leaf it is better to use the **whole plant material**, because essential oil is contained in:

- A* Essential oil glands**
- B** Essential oil-tubes
- C** Essential oil motions
- D** Parenchymal cells
- E** Essential oil passages

Elecampane roots have a wide range of pharmacologic effects. At what temperature it is better to dry these roots:

- A* Not more than 40°C**
- B 80-90° C**
- C 60-70° C**
- D 50-60° C**
- E 90-100° C**

Sage leaves contain **volatile oil** and should be dried at:

- A* 25-30°C**
- B 50-60°C**
- C 100°C**
- D 60-70°C**
- E 70-80°C**

Quality of **chamomile flowers (pot marjoram herb / eucalyptus leaves)** medicines depend on terms of collecting and **drying**. Chamomile flowers should be dried at the temperature:

- A* 35-40°C**
- B 90-100°C**
- C 60-70°C**
- D 80-90°C**
- E 70-80°C**

Pharmacy received a consignment of peppermint leaf (matricary/ chamomile flowers). How correctly to keep it in the pharmacy.

A* Separately from other types of medicinal herbal drugs

B In ordinary condition

C In metallic containers

D Protecting from the action of CO₂

E At a temperature -5 °C

Pharmaceutical factory received a parcel of lavender.

• **Standardization** of this medicinal herbal drug is carried out by:

A* Water and steam distillation

B Chromathography analysis

C Titrimetric analysis

D Biological assay

E Sublimation

Standardization of sage leaves is carried out by:

A* Water and steam distillation

B Photocolorimetric method

C Gravimetric method

D Swelling index

E Iodine value

Which method do they use to determine the **content of volatile oil** in gum (**Eucalyptus**) leaves in accordance with Pharmacopoeia requirement?

A* Water and steam distillation

B Enfleurage

C Expression

D Extraction by organic solvent

E Extraction with fatty oil

Standardization of juniper fruit (essential oil) is carried out by a method:

A* Steam distillation

B

Photoelectrocolorimetry

C Spectrophotometry

D Gravimetry

E Iodometry

Peppermint leaf and herb contains 1-3 % **essential oil**. Choose the best method of **obtaining** of peppermint oil.

A* Water steam distillation

B Expression

C Extraction by ethanol

D Enfleurage

E Adsorption by charcoal

Menthol is used for many phytochemicals production. Which method is used to get menthol **from peppermint oil**:

A* Freezing method

B Water distillation

C Biological standardization

D Sublimation

E Chromatography

Volatile oil from **rose petals** may be obtained using the following method:

A* Enfleurage

B Water distillation

C Biological standardization

D Sublimation

E Chromatography

One of volatile oil obtaining methods is **enfleurage**. Specify from which medicinal herbal drug essential oil may be obtained by this method.

A* Petals of damask rose

B Lemon peel

C Coriander fruit

D Leaf peppermint

E Matricary flowers

Eucalyptus oil is used as a bactericidal agent.

Quality index of the oil is:

A* Acid number (value)

B Iodine number

C Swelling index

D Haemolytic index

E Foam number

The quality of peppermint oil is determined by **menthol** content. What **index** determines the content of menthol in peppermint oil?

A* Ether number after acetylation (hydroxyl value)

B Acid number

C The number of foam

D Peroxide number

E Iodine number

With the purpose of determination of impurities of lavender **essential oil** the drop of oil was applied on the filter paper and warmed over the warm air stream. After some time they noticed the **increasing diameter of oil-spot**. What impurities does lavender oil have?

- A* Fatty or mineral oil**
- B** Phenol
- C** Ethanol
- D** Acetone
- E** Ether

To determine the **impurities** in **peppermint oil** some drops of ethanol are added to it. **Turbidity** was observed, which means the following impurity:

- A* Fatty oil**
- B** Phenol
- C** Acetone
- D** Ethyl-acetate
- E** Ether

Chamomile flowers contain blue essential oil, the **main component** of which is:

- A* Chamazulene**
- B Limonene**
- C Bornylisovalerianate**
- D Cineol**
- E Thymol**

Natural, synthetic and semi-synthetic **camphor** is used in medicine. Choose the medicinal plant, which is the source of **semi-synthetic** camphor.

- A* Siberian fir**
- B Silver fir**
- C Cinnamon tree**
- D Pine-tree**
- E Juniper**

Menthol has anaesthetic and antiseptic effect. Choose herbal source of menthol.

A* Folia Menthae piperitae

B Folia Salviae

C Folia Eucalypti

D Folia Betulae

E Folia Absinthii

The essential oil of **peppermint** leaves has specific smell. What compound causes it?

A* Menthol

B Carvacrol

C Cymole

D Citral

E Thymol

Aromatic compound thymol has a strong antiseptic effect. Which medicinal plant is rich in it?

A* Thymus vulgaris L.

B Coriandrum sativum L.

C Lavandula spica L.

D Mentha piperita L.

E Salvia officinalis L

Natural, synthetic and semi-synthetic **camphor** is used in medicine. Choose the medicinal plant, which is the source of **semi-synthetic** camphor.

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B Silver fir

C Cinnamon tree

D Pine-tree

E Juniper

Analyzing the volatile oil **anethol** was determined. Which herbal drug did they use to get anethol-containing volatile oil?

- A* Anisum vulgare**
- B** Coriandrum sativum
- C** Valeriana officinalis
- D** Allium sativum
- E** Allium cepa

Medicinal raw material is used for production of remedies with **expectorant** action.

Choose it:

- A* Anise**
- B** Scholar-tree
- C** Devil's plague
- D** Magnolia-vine chinese (Schizandra)
- E** Globe thistle

What raw material is the source of **volatile oil** used in pharmaceutical, confectionery and perfume industries:

- A* Peppermint**
- B Common tansy**
- C Ephedra**
- D Restharrow**
- E Horse sorrel**

A party of the MRM of the **common thyme** herb was received by a pharmacy's storehouse. The content of which **active substances**, according to the Pharmacopoeia requirements, should be analyzed?

- A* Essential oil**
- B Flavonoids**
- C Extracted substances**
- D Coumarins**
- E Saponins**

A doctor advised a herbal tea with expectorant activity for treating bronchitis of following composition: Radices Althaeae, Folium Farfarae, **Herba Origanum vulgare**. What group of biologically active substances *Origanum vulgare* belongs to?

- A* The essential oil-containing MRM**
- B** The saponin-containing MRM
- C** The alkaloid-containing MRM
- D** The Anthraquinone-containing MRM
- E** The cardiosteroid-containing MRM

It's well-known that **birch buds** are used as **diuretic** medicine. The quality of the MRM is regulated according to the content of:

- A* Essential oil**
- B** Vitamins
- C** Lipids
- D** Iridoids
- E** Saponins

Pharmaceutical factory makes a phytodrug from **common thyme** herb. Which herb may be a **substitute** if it is absent?

A* Herba Thymi serpylli

B Cortex Frangulae alni

C Folium Cassiae acutifoliae

D Folium Menthae piperitae

E Herba Leonuri quinquelobati

During the collection of plant material, it is possible to find **admixture** in it. Choose species of medicinal plant material for which ***Artemisia vulgaris*** is an admixture.

A* Herba Artemisiae absinthii

B Herba Polygoni avicularis

C Herba Artemisiae annuae

D Herba Millefolii

E Herba Leonuri cardiaca

At the time of collecting **calamus** rhizomes can be confused and an **admixture** can be collected. Specify a possible admixture to this raw material:

A* Yellow iris root

B Valerian rhizome

C Elecampane root

D Marshmallow root

E Phlojodicarpus

Juniper is used as a diuretic, anti-inflammatory and cholagogue. The medical **plant material** of it is:

A* Fruits

B Sprouts

C Leaves

D Roots

E Seed

Pharmacy received the plan about the collection of **yarrow** herb. Which species should be collected?

- A* Achillea millefolium L.**
- B Achillea micranta L.**
- C Achillea nobilis L.**
- D Achillea setacea Waldst. et Kit.**
- E Achillea pannonica L.**

Chamomile flowers are a well known and important herbal drug. In this case pharmacist should collect flowers from:

- A* Chamomilla recutita**
- B Leucanthemum vulgare**
- C Anthemis cotula**
- D Anthemis arvensis**
- E Tripleurospermum inodorum**

When making microscopic analysis of medicinal herbal drugs the following diagnostic features were established: the large parenchyma cells, **inulin-containing** parenchyma cells, expressive line of cambium; large vessels; **schizogenous** receptacles with **essential oil**. What conclusion will a pharmacist make?

- A* Rhizomata et radices Inulae**
- B Rhizomata et radices Rubiae**
- C Rhizomata cum radicibus Valerianae**
- D Radices Taraxaci**
- E Radices Ononidis**

The receptacle of wild **chamomile** has characteristic signs. Choose a right answer:

- A* Oblong, narrow-conical, hollow inside**
- B Protuberant, conical, empty inside**
- C Obtuse-conical, without a cavity**
- D Oblong-conical, on top with membranes, without a cavity**
- E Conical without a cavity**

At analyzing the raw material such signs were detected: lightly waved epidermal cells; **T-shaped hairs** that contain 2-4 cells placed in a line, to which a long ribbon-like cells with narrow ends is connected; glands with essential oil which are characteristic for the Asteraceae family. According to the indications the MRM is:

- A* Folium Absinthii**
- B** Folium Salviae
- C** Folium Urticae
- D** Folium Menthae
- E** Folium Vitis idaeae

A doctor advised a teenager with a low appetite to take appetizing medicinal herbal tea of the following composition: **Herba Absinthii**, Herba Millefolii. Specify the characteristic microscopic indications of **Artemisia absinthium** which point to the presence of this herb in a medicinal herbal tea:

- A* T-shaped hairs at the leaf margin**
- B** Simple and capitate hairs
- C** Multiended, simple and ciliar hairs
- D** Stinging and retortshaped hairs
- E** Multiended and capitate hairs

Doctor recommended medicine “**Rotokan**” as a gargling. It contains liquid extracts of chamomile and marigold flowers. Choose an absent herbal raw material:

- A* Common yarrow herb**
- B Sandy everlasting flowers**
- C Field pansy flowers**
- D St. John’s-wort herb**
- E Lily-of-the-valley flowers**

Phytomedicine «**Fitolysin**» contains an extract from medical plant:

- A* Pot marjoram**
- B Locoweed**
- C Marshmallow**
- D Restharrow**
- E Wormwood**

What medicinal raw material is used for obtaining the ointment «Ephcamon»?

- A* Folia Eucalypti**
- B Folia Salviae**
- C Fructus Coriandri**
- D Flores Chamomillae**
- E Folia Absinthii**

Doctor advised a herbal tea “**Elekasol**” to treat acute respiratory disease. It contains: bur marigold herb, chamomile flowers, liquorice roots, eucalyptus leaves, marigold flowers.

Choose an absent plant:

- A* Sage leaves**
- B Nettle leaves**
- C Bearberry leaves**
- D Common plantain leaves**
- E Stramonium (jimson weed) leaves**

Plant medicine

«**Salvin**» is used as astringent, anti-inflammatory and antimicrobial agent.

What medicinal raw material should be used for manufacturing this drug:

A* Sage leaves

B Sylvan horstail herb

C Common horstail herb (Equisetum)

D Peppermint leaves

E Motherwort herb

The **sage** (**Salvia officinalis**) leaves have antimicrobial, astringent and anti-inflammatory activity. Medicines from it are used in stomatological practice. Specify medicine which is the acetone extract from sage leaves:

A* Salvin

B Rotokan

C Chlorophyllipt

D Urolesan

E Vicair

What plant could be used for industrial manufacturing expectorant medicine «**Pertussin**»:

A* Thymus serpyllum

B Capsella bursa-pastoris

C Hypericum perforatum

D Erysimum diffusum

E Polygonum aviculare

A patient appealed to a pharmacy to give him «**Pertussin**» to cure cough. The extract of what medicinal raw material can be recommended at the absence of this remedy:

A* Herba Thymi serpylli

B Cortex Frangulae alni

C Folium Cassiae acutifoliae

D Folium Menthae piperitae

E Herba Leonuri quinquelobati

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Liquorice roots are the sources of various medicinal forms:

• tablets, powders, syrups etc., but an injection is not developed. This fact may be explained by the **haemolytic** effect, which is due to:

A* Saponins

- B** Alkaloids
- C** Essential oils
- D** Iridoids
- E** Polysaccharides

To identify herbal drugs a pharmacist prepared water extract and intensively shook a test tube, stable and abundant **foam** was observed there. What biologically active compounds are present in herbal drugs?

A* Saponins

- B** Tannic compounds
- C** Alkaloids
- D** Anthraquinone derivatives
- E** Fatty oils

Calendula flowers contain triterpenoids, flavonoids, essential oils, carotenoids. The main condition of drying is the temperature:

A* 40-45°C

B Up to 40°C

C 50-60°C

D 80-90°C

E The raw material must be used fresh without drying

A patient appealed to the pharmacy for treatment of the **long-term unhealed skin burn**. What phytomedicine can be recommended in this case:

A* Calendula flower

B Hawthorn fruit

C Motherwort herb

D Lily-of-the-valley herb

E Valerian rhizome with roots

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When analyzing the herbal drug it was established that: pieces of roots are cylindrical shape, of different length, and covered longitudinally by the wrinkled cork. Cleared raw material is of **yellow** to brown-yellow color from the outside, light-yellow and very **fibred on the fracture**. Smell is weak. **Taste is very sweet**, slightly irritating. What conclusion will pharmacist make?

A* Radices Glycyrrhizae

B Radices Taraxaci

C Radices Berberidis

D Radices Araliae
mandshuricae

E Radices Ginseng

Great valerian rhizome and roots contain **saponins**. What method of analysis used to detect levels of saponins content?

A* Foaming index

B Acid number

C Ester number

D Iodine number

E Saponification value

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Java tea is used for treatment of kidney disease. What is the raw material of this plant?

- A* Leaves**
- B Inflorescences**
- C Herb**
- D Roots**
- E Flowers**

Some **saponins** show **diuretic** action. What medical plant contains this group of biologically active substances?

- A* Indian Java tea**
- B Licorice**
- C Great valerian**
- D Ginseng**
- E Chestnut**

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Medicines from **Eleuthero** rhizome and roots are used as restorative and **adaptogenic** remedies. At their absence in the pharmacy it is possible to **replace** them by preparations from:

- A* Ginseng roots**
- B Elecampane roots**
- C Valerian rhizome with roots**
- D Great valerian rhizome**
- E Calamus rhizome**

If an **adaptogenic** medicine from the **Ginseng** roots is absent in the pharmacy it is possible to **replace** it by medicine from:

- A* Eleutherococcus senticosus**
- B Orthosiphon stamineus**
- C Glycyrrhiza glabra**
- D Polygala senega**
- E Astragalus dasyanthus**

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Medicines of Ginseng roots have restorative, **adaptogenic** effects, improve mental and physical ability to work. If the tincture of **Ginseng** is absent in a pharmacy it is possible to **replace** it by medicines, which contain similar biological active substances from raw material:

A* Radices Araliae

B Radices Valerianae

C Radices Inulae

D Radices Ononidis

E Radices Rhei

Specify medicinal plant material which has **restorative** action, and contains **tetracyclic triterpenoidal saponins**:

A* Ginseng roots

B Licorice roots

C Eleuthero roots

D Marshmallow

roots

E Burdock roots

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Steroidal saponins are used for hormone synthesis. Which medicinal plant is rich in it?

A* Rhizomata cum radicibus Dioscoreae

B Rhizomata et radices Valerianae

C Rhizomata cum radicibus Veratri

D Rhizomata cum radicibus Primulae

E Radix Symphyti

Medicine "**Polisponin**" is used for treatment of atherosclerosis. What group of biologically active compounds is responsible for its pharmacological activity?

A* Steroid saponins

B Triterpenoid saponins

C Isoquinoline alkaloids

D Cardiac glycosides

E Tropane alkaloids

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Specify medicinal raw material which is a

source of the

semisynthetic

corticosteroid hormones:

A* Fresh Agava leaves

B Fresh Aloe leaves

C Common rue herb

D Strophanthus seed

E Holy thistle seed

Dust of some kinds of medicinal raw material can **irritate mucous membrane** during processing, that's why we should take care working with:

A* Rhizoma et radices Polemonii

B Rhizomata Tormentillae

C Radices Araliae

D Rhizomata Bistortae

E Rhizomata et radices Rubiae

The plan of purveyance of medicinal herbal drugs – herb of **horsetail** entered to a chemist's shop. What type of horse-tail is the subject of purveyance and use in medicine?

A* Herba Equiseti arvensis

B Herba Equiseti hyemalis

C Herba Equiseti sylvatici

D Herba Equiseti pratensis

E Herba Equiseti palustris

Phytomedicine «**Flakarbin**» has spasmolytic, anti-inflammatory and antiulcer actions. The herbal source of this medicine is:

A* Licorice

B Great valerian

C Common horse-chestnut

D Aralia

E Calendula

“**Liquiriton**” is used for treatment of gastric and duodenal ulcer. What herbal raw material is the source of it?

- A* Licorice roots**
- B Common plantain leaves**
- C Matricaria flowers**
- D Fustic leaves**
- E Equisetum herb**

A few medicines with various action are manufactured from the **Licorice roots**.

Propose the patient the medicine based on Licorice flavonoids with antiulcer action:

- A* Liquiriton**
- B Glycerin**
- C Glyceram**
- D Licorice root syrup**
- E Convaflavin**

One of the methods of determination of active ingredients in raw materials is a method of **biological standardization**. What group of biologically active substances it is used for?

- A* Cardiac glycosides**
- B Alkaloids**
- C Fatty oil**
- D Tannins**
- E Mucilage**

In tinctures content of active substances is determined by the **biological method** in cases when the major biologically active substances are:

- A* Cardiac glycosides and bitter substances**
- B Flavonoids and coumarins**
- C Tannins and alkaloids**
- D Hormones and saponins**
- E Essential oils and anthracene derivatives**

Standardization of **lily-of-the-valley** herb/**foxglove** (*Digitalis purpurea* or *Digitalis lanata*) leaves is carried out by the proper method:

A* Biological method on frogs (Biological standardization)

B Biological method on dogs

C Spectrophotometry

D Densitometry

E High-performance liquid chromatography

One of the **qualitative methods** for the determination of the biologically active compounds content is **biological standardization**. Which compounds are analyzed by this method?

A* Cardioglycosides

B Alkaloids

C Fatty acids

D Tannins

E Mucilage

CARDIAC GLYCOSES

Cardioglycosides of lily-of-the-valley leaves are used for treatment of cardiac insufficiency. This raw material should be analyzed every year because such process is possible:

A* Enzymatic hydrolysis of cardioglycosides

B Alkaline hydrolysis of cardioglycosides

C Weathering of cardioglycosides

D Re-establishment of cardioglycosides

E Sublimation of cardioglycosides

To get standardized **lily-of-the-valley** herb it should be dried at the temperature of 50-60°C, to avoid the following biochemical process:

A* Enzymatic hydrolysis of cardioglycosides

B Oxidation of phenolic compounds

C Evaporation of volatile oils

D Oxidation of resinous compounds

E Oxidation of terpenoids

Foxglove leaves are used for cardiotoxic phytochemicals production. At which temperature they should be **dried**:

A* 50-60°C

B 30-40°C

C 80-90°C

D 20-25°C

E 90-100°C

Cardioactive medicines are obtained from Foxglove leaves, but they have cumulative characteristic. Specify plants which contain **cardiac glycosides** and do not have cumulative properties:

A* Lily-of-the-valley, Spring adonis, Treacle mustard

B Strophanthus, Treacle mustard, Tickseed

C Spring adonis, Common horstail (Equisetum), Primrose

D Bird cherry tree, Ephedra, Lily-of-the-valley

E Bush pea, Strophanthus, Rhaponticum

In the pharmacy
cardioglycosides
(Adonis, Foxglove,
Strophanthus)

containing
phytochemicals
should be kept:

A* List B

B List A

**C Common list for
phytochemicals**

**D Separately from
other phytochemicals,**

**E In well closed
bottles**

The medicinal raw material
and galenic medicines
containing **cardiac
glycosides** should be kept:

**A* According to the B list
(these drug substances
require caution in
handling, storage or use)**

**B According to the A list
(poisonous drug substances)**

**C According to the general
list**

**D Separately from medical
plant material, which contain
nutritive**

**E In the tightly bottled
container, closed by paraffin**

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Raw material of foxglove is a source of **cardiotonic** drugs.

What **purple foxglove** organs are used as herbal raw material?

A* Leaves

B Roots

C Fruits

D Seeds

E Herb

Herbal raw material of **spring adonis** is used for heart diseases treatment. What is the raw material of this plant?

A* Herb

B Inflorescences

C Leaves

D Roots

E Flowers

The 60 years old patient has **cardiac insufficiency**. What medicine makes the most efficient use for achieving **rapid pharmacological effect**?

- A* Corglycone**
- B** Digitoxin
- C** Digoxin
- D** Celanide
- E** Adoniside

Plant medicine «**Corglycone**» is used as a cardioactive remedy for treating cardio-vessel diseases. Medicinal raw material for this plant medicine is:

- A* Lily-of-the-valley leaves**
- B** Foxglove purple leaves
- C** Treacle mustard leaves
- D** Eucalyptus leaves
- E** Stramonium leaves

Choose medicine which is obtained from **woolly (Grecian) foxglove** raw material:

- A* Celanide**
- B Corglycon**
- C Digitoxin**
- D Adoniside**
- E Erysimin**

Choose medicine which is obtained from **woolly (Grecian) foxglove** raw material:

- A* Lantoside**
- B Corglycone**
- C Digitoxin**
- D Adoniside**
- E Erysimine**

Phytomedicine

«**Digoxin**» is used for treating cardiac decompensation. The plant source of this medicine is:

- A* Grecian foxglove**
- B Rusty foxglove**
- C Yellow foxglove**
- D Purple foxglove**
- E Ciliated foxglove**

Medicine «**Adoniside**» contains cardiosteroids. What medicinal plant material this medicine is obtained from?

- A* Spring adonis herb**
- B Strophanthus seed**
- C Lily-of-the-valley herb**
- D Lily-of-the-valley leaves**
- E Foxglove purple leaves**

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Quality of medicinal raw material is regulated by biological active substance content.

What kind of raw material the content of **lanatosides** is determined in?

- A* Grecian foxglove**
- B Strophanthus**
- C Solomon's seal**
- D Spring adonis**
- E Lily-of-the-valley**

Which cardioglycoside is **not** present in **purple foxglove**, unlike other species of foxgloves?

- A* Lanatoside**
- B Digitoxin**
- C Purpureaglycoside B**
- D Purpureaglycoside A**
- E Glucogitaloxin**

One of basic active substance of **treacle mustard** herb is **erysimin**. What class of biological active substances does erysimin belong to?

- A* Cardiosteroids**
- B Anthraquinones**
- C Steroid saponins**
- D Thioglycosides**
- E Flavonoids**

Taste is one of organoleptic characteristics of the medicinal raw materials authenticity. For what medicinal raw material **taste is never determined?**

- A* Purple Foxglove**
- B Marshmallow**
- C Common Plantain**
- D Horse-chestnut**
- E Valerian**

What **wild** raw material from the family **Scrophulariaceae** the **cultivated** raw material of Foxglove purple can be replaced by?

- A* Digitalis grandiflora Mill.**
- B Linaria vulgaris Mill.**
- C Gratiola officinalis L.**
- D Veronica officinalis L.**
- E Verbascum phlomoides L.**

During the commodity research analysis of the raw material it was discovered that it consists of vaginal **oblong-elliptic leaves with arc venation.**

Flowers were white, **bell shaped.** Specify this plant:

A* Lily-of-the-valley

B Spring adonis

C Milk vetch

D Creeping Thyme (wild thyme)

E Common St. John's-wort

A **tetracytic stomatal apparatus, raphides** and needle-like crystals of calcium oxalate were detected at microscopic analysis of a medicinal raw material. Specify the MRM:

A* Lily-of-the-valley leaves

B Spring Adonis herb

C Treacle mustard herb

D Foxglove leaves

E Strophanthus seeds

During the commodity research analysis of the raw material it was discovered that it consists of simple or little branchy **stem**, slightly ribbed, covered with **leaves, flowers, buds**. Leaves are alternate, almost sessile, digitated into 5 parts, 2 lower ones are shorter, pinnatisect. **Flowers** are large, **goldish yellow**, solitary. Calyx is green, pubescent. Smell is weak. **Taste is never determined!** Plant material is poisonous. Therefore this raw material is:

- A* Spring Adonis**
- B Stinging nettle**
- C Centaury**
- D Common motherwort**
- E Water pepper**

Spring adonis herb is used for various cardiac drugs production. What is the reason of **limiting the procurement (collection)** of raw materials?

- A* The plant is guarded**
- B The plant does not grow in Ukraine**
- C The plant has a limited distribution in Ukraine**
- D The raw material is not available**
- E The plant grows on the polluted area**

Spring adonis herb is used as raw material for various cardiac drugs. Raw material of Adonis is **collected** from flowering to fruit drop period in a following way:

A* The herb is cut by a knife or sickle at 5-10 cm from the ground

B Stems are picked manually

C Leaves are picked

D Aerial part of plant is harvested manually

E The herb is harvested together with the underground part

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GMP of herbal drug collection has great importance for the quality of medicinal plants. That's why the proper period of the **lily-of-the-valley leaves collection** is:

- A* Before flowering**
- B After flowering**
- C At flowering**
- D At fruitage**
- E Late autumn**

During the collection of medicinal herbal drugs some cases of **poisoning** may happen. The **collection** of the following plant material is **forbidden by schoolkids**:

- A* Lily-of-the-valley leaves**
- B Nettle leaves**
- C Motherwort leaves**
- D Immortelle leaves**
- E Marshmallow leaves**

Phytochemicals from **lily-of-the-valley** are well known as cardiotonics and sedatives. During the harvesting it is possible to collect the following **adulteration** to convallaria herb:

A* Polygonatum officinale

- B** Digitalis purpurea
 - C** Digitalis lanata
 - D** Adonis vernalis
 - E** Strophanthus
- Kombe

On collection of **lily-of-the-valley** leaves it is possible to get an **admixture**. This admixture is:

A* Solomon's seal

B Yellow foxglove

C Spring adonis

D Treacle mustard

E Amyroot

Lily-of-the-valley herb is a source of cardiotonic drugs. To identify **cardioglycosides** it is possible to use such reaction:

A* With Legal's reagent

B With Draendorff's reagent

C Cyanidin reaction

D With tannin

E Azocoupling

During the analysis of purity of medicinal herbs a **poisonous admixture** was found. What reaction should pharmacist-analysis choose for identification of **cardiac glycosides** in poisonous admixture?

A * Reaction with Lieberman-Burchard reagent

B Reaction with Trim-Hill reagent

C Reaction with Stahl's reagent

D Reaction with Dragendorff's reagent

E Reaction with Marqui's reagent

To **identify** medicinal drug from group of cardiac glycosides analysis should prove the presence of **unsaturated lactone** ring.

• Which **reagent** should be used for the abovementioned?

A* Alkaline solution of picric acid

B Alkaline solution of hydroxylamine

C Alkaline solution of potassium tetraiodomercurate

D Discolored solution of magenta (rosein)

E Saturated solution of sodium chloride