

KROK-2 QUESTIONS

ALKALOIDS



Cultivation of this plant and production of medicinal plant material is under the **UNO control** and is **forbidden** in Ukraine.

This plant is:

A* Opium poppy

B Locoweed

C Colchicum

D Tulip poppy

E Ginseng



The **Papaveraceae** family plants contain **isoquinoline** alkaloids and are widely used in medicine. Indicate the species which **grows wildly and is cultivated in Ukraine:**

A * Tulip poppy

B Opium poppy

C Plume Poppy

D Coral Plume

E Field Poppy



Belladonna, stramonium, and **henbane** leaves contain tropane **alkaloids**. This medicinal plant material should be stored:

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

B According to the A list (poisonous drug substances)

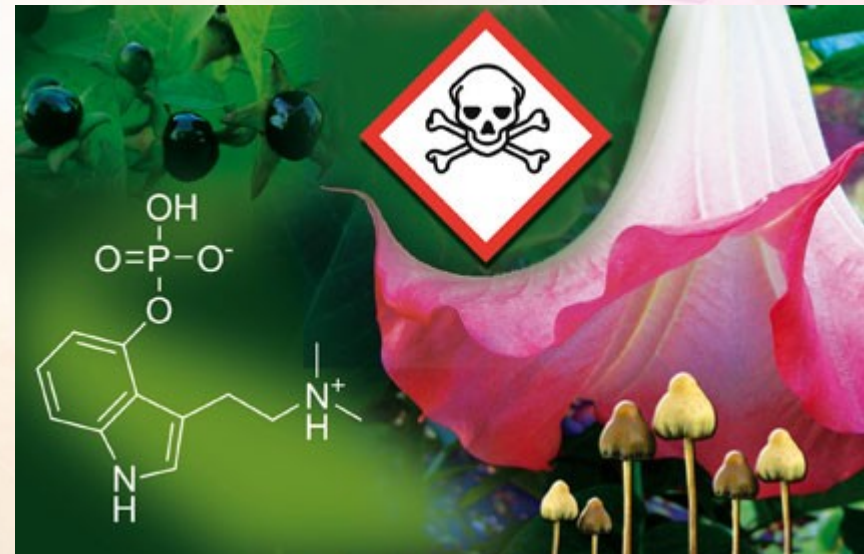
C According to the ordinary list

D According to the "Essential oil material" list

E Equated to narcotic

- **Ephedra herb**
- **Opium poppy capsules**
- **Bush pea herb**

- **NB! Any alkaloid-containing plant material – B list**



Children and pupils often collect medicinal raw material. Choose the medicinal plant material **not allowed** to be collected by children and pupils:

A * Herba Belladonnae

B Herba Hyperici

C Herba Bidentis

D Herba Leonuri

E Herba Origani

- **NB! Any alkaloid-containing plant material – taste is not determined**

Taste is one of organoleptic characteristics of the medicinal raw material's authenticity. For which medicinal plant material **taste is never determined?**

A * Jimson weed

B Motherwort

C Milk thistle

D Common Thyme

E Wild parsnip

Alkaloids-containing medicinal raw material should be **dried at the temperature:**

A * 50-60°C

B 30-45°C

C 70-80°C

D 80-90°C

E 90-100°C



Berberine is a biologically active compound of barberry. Which group of biologically active compounds does berberine belong to?

- A * Alkaloids**
- B Glycosides**
- C Saponins**
- D Flavonoids**
- E Anthracene derivatives**

Snakeweed roots contain **reserpine**. It has hypotensive and sedative effects. Which class of biologically active substances does reserpine belong to?

- A * Alkaloids**
- B Saponins**
- C Flavonoids**
- D Anthracene derivatives**
- E Cardioglycosides**

- **NB! Giving names to alkaloids – adding **–INE** to generic/specific/trivial name of plants, or its pharmacological effect, or the name of the scientist who has 1st described it**

At identification of **poisonous** raw material the fact, that such medicinal plants as ***Atropa belladonna***, ***Hyoscyamus niger***, ***Datura stramonium*** have a common **microscopic** diagnostic feature is taken into consideration. This feature is:

A * The raw material contains **calcium oxalate** in its cells

B The epidermal cells have wavy cell walls

C Location of essential oil inside a cell

D Cells are located in two layers

E Presence of simple curved hairs

During the commodity research analysis of the raw material it was discovered that it consists of a mixture of stems, leaves, flowers and fruits. Stems are cylinder, up to 4 cm long, up to 1,5 cm thick, light green with a spongiouse core. Flowers are solitary, corolla is five-lobbed and of a **dull purplish colour**. **The plant material is poisonous!** It can be concluded that the raw material is:

- A * Belladonna herb**
- B St. John's-wort herb**
- C Peppermint herb**
- D Nettle herb**
- E Shepherd's-purse herb**



The **belladonna** leaves contain **tropane** alkaloids and are a poisonous admixture to other types of raw material. This admixture can be identified at microdiagnostics by such anatomic sign:

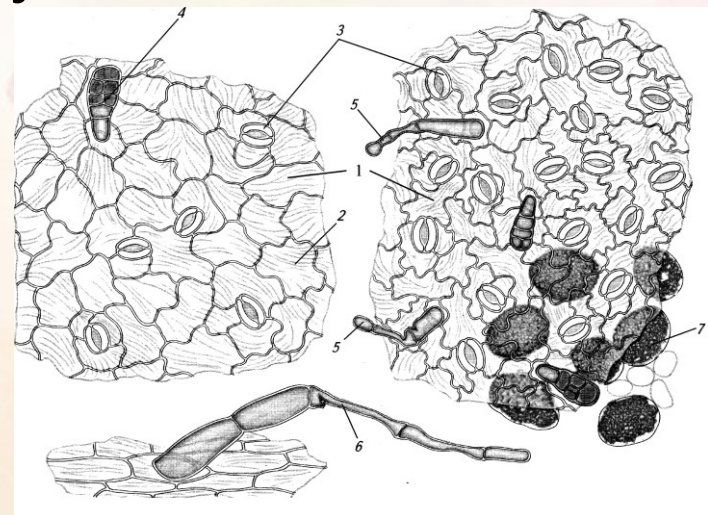
A * Cells, filled with calcium oxalate sand

B Cells with essential oils

C Cells with fatty oils

D Cells, filled with spherical crystals

E Cells, filled with prismatic crystals



The MRM with such characteristics is received for analysis: a mixture of obovate-acuminate leaves up to 25 cm long and up to 20 cm wide; base of the leaf is cuneated with deep sinuate margin; petiole is cylindrical. **Venation is palmate-netted**: the main vein and major veins come out at the inner surface of a leaf. The upper surface is dark and greyish-green, the under surface paler. A smell is weak, narcotic. **Taste is never determined. The plant is poisonous!** Which plant does the described MRM belong to?

- A * Datura stramonium**
- B** Passiflora incarnata
- C** Chelidonium majus
- D** Hyoscyamus niger
- E** Vinca minor



The **Jimson weed** leaves contain **tropane** alkaloids and are a poisonous admixture to other types of raw material.

This admixture can be identified at microdiagnostics by such anatomic indications:

A * Numerous druses

B Cells with mucilage

C Cells with raphides

D Cells with needle-like crystals

E Cells, filled with calcium oxalate sand

- **NB! Jimson weed=Stramonium=*Datura stramonium***

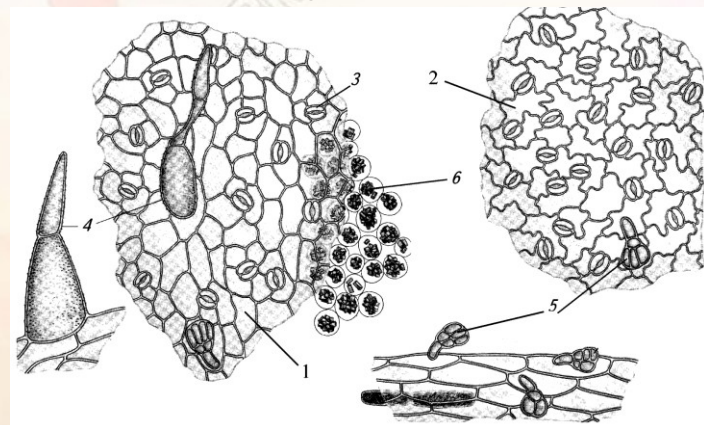
The characteristic microdiagnostic feature of the medicinal plant material – the **Jimson weed leaves** – is the presence of multicellular warty hairs and inclusions of **calcium oxalate**, named:

A * Druses

B Raphides

C Lythocyst cells

D Microcrystallic sand



The **henbane** leaves contain **tropane** alkaloids and are a poisonous admixture to other types of plant material. This admixture can be identified at microdiagnostics by such anatomic indications:

A * Cells, filled with prismatic crystals

B Cells with essential oils

C Cells with fatty oils

D Cells, filled with spherical crystals

E Cells, filled with calcium oxalate sand

The characteristic microdiagnostic feature of the **henbane** leaves is a presence of multicellular simple and capitate hairs and **inclusions of calcium oxalate**, named:

A * Prismatic crystals

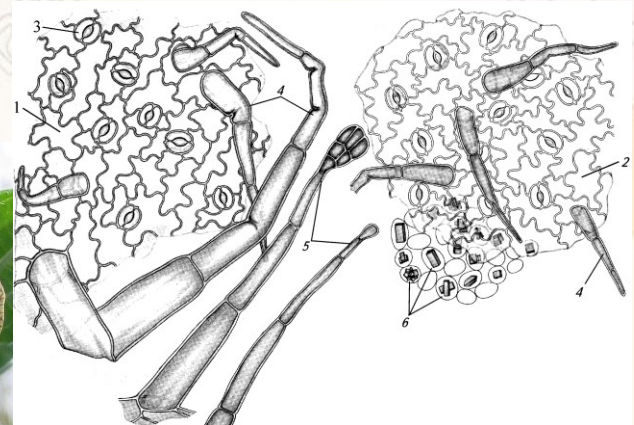
B Druses

C Cystoliths

D Needle-like crystals

E Raphides

E Needle-like crystals



The positive result with **Dragendorff 's reagent** at chemical analysis of barberry root was received. Presence of which compounds does this reaction confirm?

- A * Alkaloids**
- B Steroids**
- C Triterpenoids**
- D Furocoumarins**
- E Chromones**



Orange-red spots appear on the yellow background after processing of a chromatogram with **Belladonna** leaves extract by **Dragendorff's** reagent. It confirms the presence of:

- A * Alkaloids**
- B Saponins**
- C Tannins**
- D Cardiac glycosides**
- E Phenolic glycosides**

The adulteration with **alkaloids-containing** medicinal plant material is possible during plant material collection. These compounds can be **identified** using the reaction with:

- A * Dragendorff's reagent**
- B** Legal's reagent
- C** Trim-Hill's reagent
- D** Stahl's reagent
- E** Fehling's reagent

Common periwinkle leaves are used for devincan, vincapan production. **Vincristine** is determined in leaves by a reaction:

- A * With Dragendorff's reagent**
- B** With solution of iron chloride
- C** Legal's reaction
- D** Diazocoupling reaction
- E** Reaction with sulfuric acid

Choose a reagent which pharmacist-analyst should use to **identify alkaloids** in herbal raw material.

- A * Dragendorff's reagent**
- B** Bromine water
- C** Alkali solution
- D** Stahl's reagent
- E** Trim-Hill's reagent

The remedies of **Cayenne pepper** are used as irritant, warming remedy for neuralgia, radiculitis. This effect is provided by:

- A * Capsaicinoids**
- B Saponins**
- C Flavonoids**
- D Carotenoids**
- E Phenolic glycosides**



- **NB! Cayenne pepper = *Capsicum annuum***

Specify the medicinal raw material, which is used for **colchamine** ointment production:

- A * Colchicum corm**
- B Hellebore rhizomes and roots**
- C Scopolia rhizomes**
- D Belladonna root**
- E Snakeweed root**



Colchicine alkaloids are used for malignant tumours treatment. These medicines are obtained from:

- A * Colchicum**
- B Bush pea**
- C Common periwinkle**
- D Belladonna**
- E Lobelia (Indian tobacco)**

Choose plant containing **quinolizidine** alkaloids that have **expectorant** effect:

- A * Thermopsis lanceolata**
- B Datura stramonium**
- C Chelidonium majus**
- D Berberis vulgaris**
- E Orthosiphon stamineus**

- **NB! Bush pea=**
Thermopsis lanceolata

Bush pea herb is used for medicines with **antitussive** activity production. Which alkaloid is isolated from it?

- A * Thermopsine**
- B Hyndarine**
- C Codeine**
- D Glaucine**
- E Protopine**



A tincture and extracts of which raw material are included in complex medicines

«**Bellataminal**»,
«**Becarbon**», «**Besalol**»,
«**Bellalgin**»?

- A * Belladonna herb**
- B Lily-of-the-valley herb**
- C Locoweed herb**
- D Tickseed herb**
- E Celandine herb**



The representatives of ***Solanaceae*** family are widely used in medical practice as **alkaloid-containing** plants.

Which from the representatives of the family is the source of **steroidal alkaloids**?

- A * Solanum laciniatum**
- B Scopolia carniolica**
- C Capsicum annum**
- D Solanum tuberosum**
- E Atropa belladonna**



The alkaloid **codeine** is prescribed as antitussive. Which MRM contains this alkaloid?

A * Opium poppy capsules

B Plume Poppy herb

C Celandine (Killwort) herb

D Common periwinkle herb

E Tea leaves



Codeine for medical purpose can be received in a semisynthetic way from a plant-derived **alkaloid of the similar structure**. Specify this alkaloid:

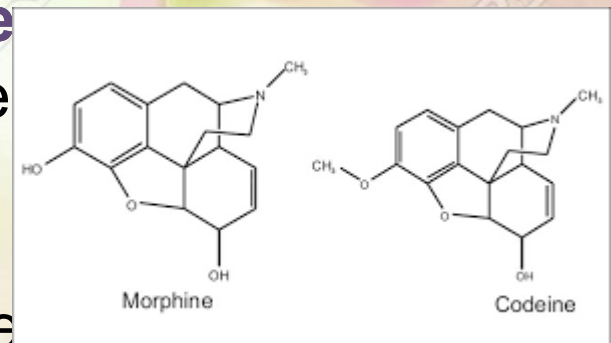
A * Morphine

B Papaverine

C Berberine

D Protopine

E Chelidonine



The **tulip poppy** herb (*Herba Glaucii flavi*) is used as antitussive remedy. The quality of this raw material is characterized by the content of:

- A * Glaucine**
- B Berberine**
- C Pachycarpine**
- D Rosevine**
- E Sanguinarine**



The alkaloid **codeine** with anticough action also has a narcotic effect. Therefore in pediatric practice it is necessary to **replace** it by other alkaloid which does not have this side effect:

- A * Glaucine**
- B Papaverine**
- C Thebaine**
- D Capsaicine**
- E Jervine**

The alkaloid **glaucine** has antitussive action. What MRM contains this alkaloid?

- A * Tulip poppy herb**
- B Plume Poppy herb**
- C Celandine herb**
- D Common periwinkle herb**
- E Tea leaves**

Alkaloid **glaucine** has an antitussive effect that is stronger and longer if compared to that of codeine, and exhibits no narcotic side effects. What medicinal plant contains glaucine?

- A *Yellow hornpoppy**
- B** Celandine
- C** Thermopsis lanceolata
- D** Datura
- E** Henbane bell (*Scopolia carniolica*)

Replace **glaucine hydrochloride**, which cannot be found at the pharmacy, with another herbal medicine of a similar action for the patient :

- A * Broncholytin**
- B** Mucaltin
- C** Codeine phosphate
- D** Anti-cough pills
- E** Galanthamine hydrobromide

- **NB! Yellow hornpoppy = Tulip poppy = *Glaucium flavum***

It is known that **fungi** can be the source of biologically active substances. For example, the source of **indole alkaloids** is:

A * Ergot

B Snakeroot

C Nux vomica

D Foxfeet

E Scopolia



Medicines of **ergot** are used in obstetric-gynecological practice for uterus contraction and for cardiovascular diseases treatment. Quality of this raw material is estimated according to the quantity of:

A * Ergotoxine

B Atropine

C Hyoscyamine

D Reserpine

E Ajmaline

Medicines «**Passit**», «**Novopassit**» are used as tranquilizers, sedative and light soporific remedies. These medicines are obtained from:

- A * Passionflower herb**
- B Tickseed herb**
- C Sage leaves**
- D Elecampane herb**
- E Common periwinkle herb**



An **alkaloid-containing** phytomedicine is recommended to treat **neurasthenia, insomnia, climacteric disorders**. Choose this phytomedicine.

- A * Novopassit**
- B Ergotamine**
- C Glaucine hydrochloride**
- D Securinine nitrate**
- E Vinblastine**

Medicines of **rauwolfia** roots are used for high blood pressure treatment. Quality of this raw material is determined according to the quantity of:

- A * Reserpine**
- B Atropine**
- C Hyoscyamine**
- D Vinblastine**
- E Adonitoxin**



Medicines «**Ajmaline**» and «**Pulsnorma**» are used as **antiarrhythmic** remedies. These medicines are obtained from:

- A * Snakeroot**
- B Common periwinkle herb**
- C Stramonium leaves**
- D Catharanthus leaves**
- E Nux vomica seeds**

- **NB! Rauwolfia = Snakeroot = *Rauwolfia serpentina***

Choose the medicinal raw material which is used for obtaining medicine «**Sanguiritrin**» with antimicrobial activity:

- A * Plume poppy**
- B Datura**
- C Celandine**
- D Capsicum**
- E Bush pea**



The herbal medicine «**Ukrain**» is used as an antitumour remedy. The medicinal raw material for this medicine is:

- A * Celandine herb**
- B Sage leaves**
- C Peppermint leaves**
- D Motherwort herb**
- E Barberry root**



Medicines of **Madagascar periwinkle** (*Catharanthus roseus*) are used for treatment of lymphogranulomatosis, haematosarcoma and in acute leukaemia therapy. Quality standardization of this raw material is carried out according to the content of:

A * Vinblastine

B Harmine

C Atropine

D Hyoscyamine

E Strophanthidine

