



NATIONAL UNIVERSITY OF PHARMACY  
DEPARTMENT OF DRUGS TECHNOLOGY  
Pharmacy-based technology of drugs



# *NON-AQUEOUS SOLUTIONS*



***A LECTURE FOR ENGLISH STUDENTS  
of THE 3-RD COURSE IN THE  
SPECIALTY "PHARMACY"  
Edited by associate professor  
Herasymova I.V.***

# ***THE PLAN OF THE LECTURE***

1. Non-aqueous solutions.
2. Technology of alcohol solutions.
3. Non-aqueous solutions' quality control and registration for dispensing.

## ***QUESTIONS FOR SELF-CONTROL***



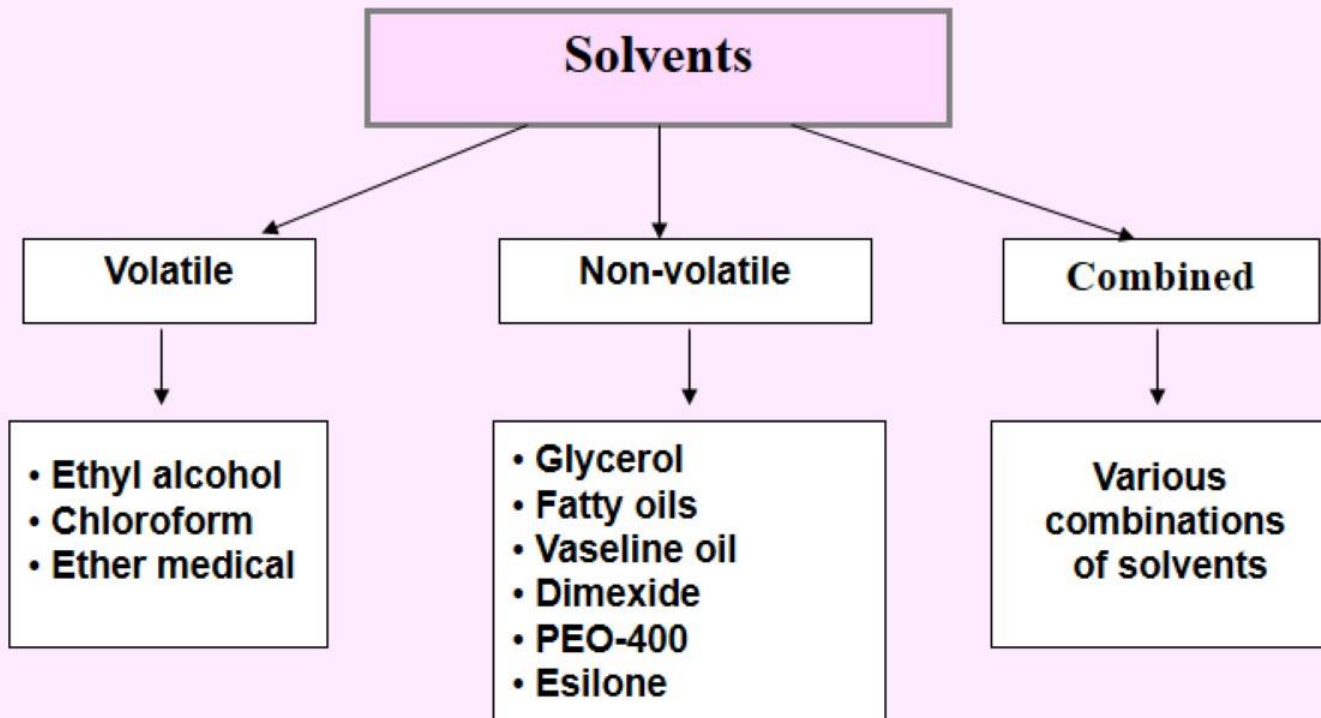
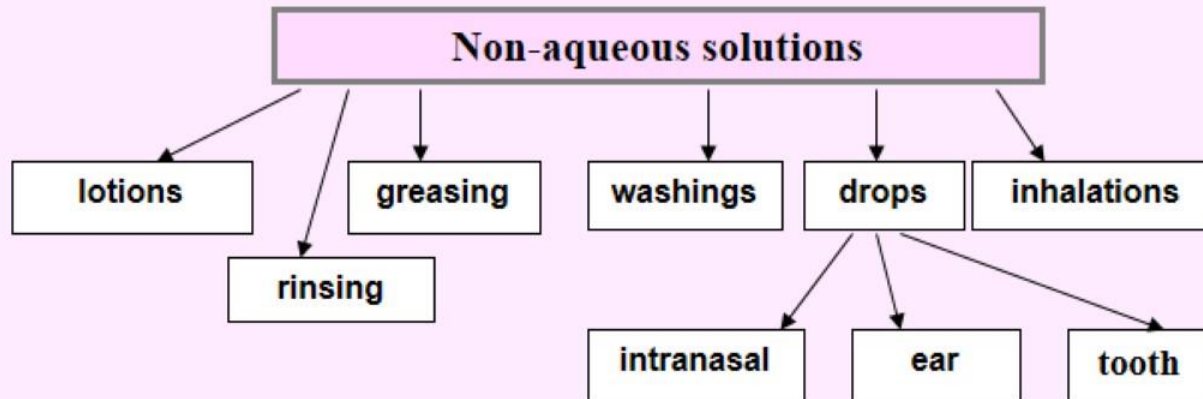
1. Characteristics of non-aqueous solvents (ethyl alcohol, vegetable oils, Vaseline oil, glycerol, chloroform, esylons, dimexide, polyethyleneoxyde-400).
2. Requirements to non-aqueous solvents .
3. Rules engineering safety at work and explosive flammable solvents



## References:

1. Tikhonov A.I., Yarnykh T.G., Yuryeva A.B., Garkavtseva O.A. **Chemist's Technology of Drugs: The manual for students of higher schools** / Ed. by A.I. Tikhonov and T.G. Yarnykh. – Kharkiv: NUPh; Original, 2011. – 424 p
2. **Dry, liquid and soft medicinal forms.** A textbook for English students in speciality “Pharmacy” / A.I. Tikhonov, T.G. Yarnykh, A.B. Yuryeva, L.N. Podorozhna, S.S. Zuykina; Ed. by A.I. Tikhonov. – Kharkiv: NUPh; Original, 2011. – 208 p.
3. Tikhonov A.I., Chemist's technology of drugs. **Liniments.** A lecture for English students of the 3-rd year, speciality “Pharmacy”: a handbook for out-of-class work of students / Edited by acad. A.I. Tikhonov. - Kh.: PH of NUofPh, 2009. – 24 p.
4. Tikhonov A.I., Yarnykh T.G., Yuryeva A.B., Podorozhna L.N., Zuykina S.S. **Biopharmaceutics.** Lectures for English students on the speciality “Pharmacy”: a handbook for the out-of-class work of students/ edited by acad. A.I. Tikhonov. – Kharkiv: NUPh, Original, 2011. – 140 p.

# 1. NON-AQUEOUS SOLUTIONS





# 1. NON-AQUEOUS SOLUTIONS

## Peculiarities of the non-aqueous solutions technology

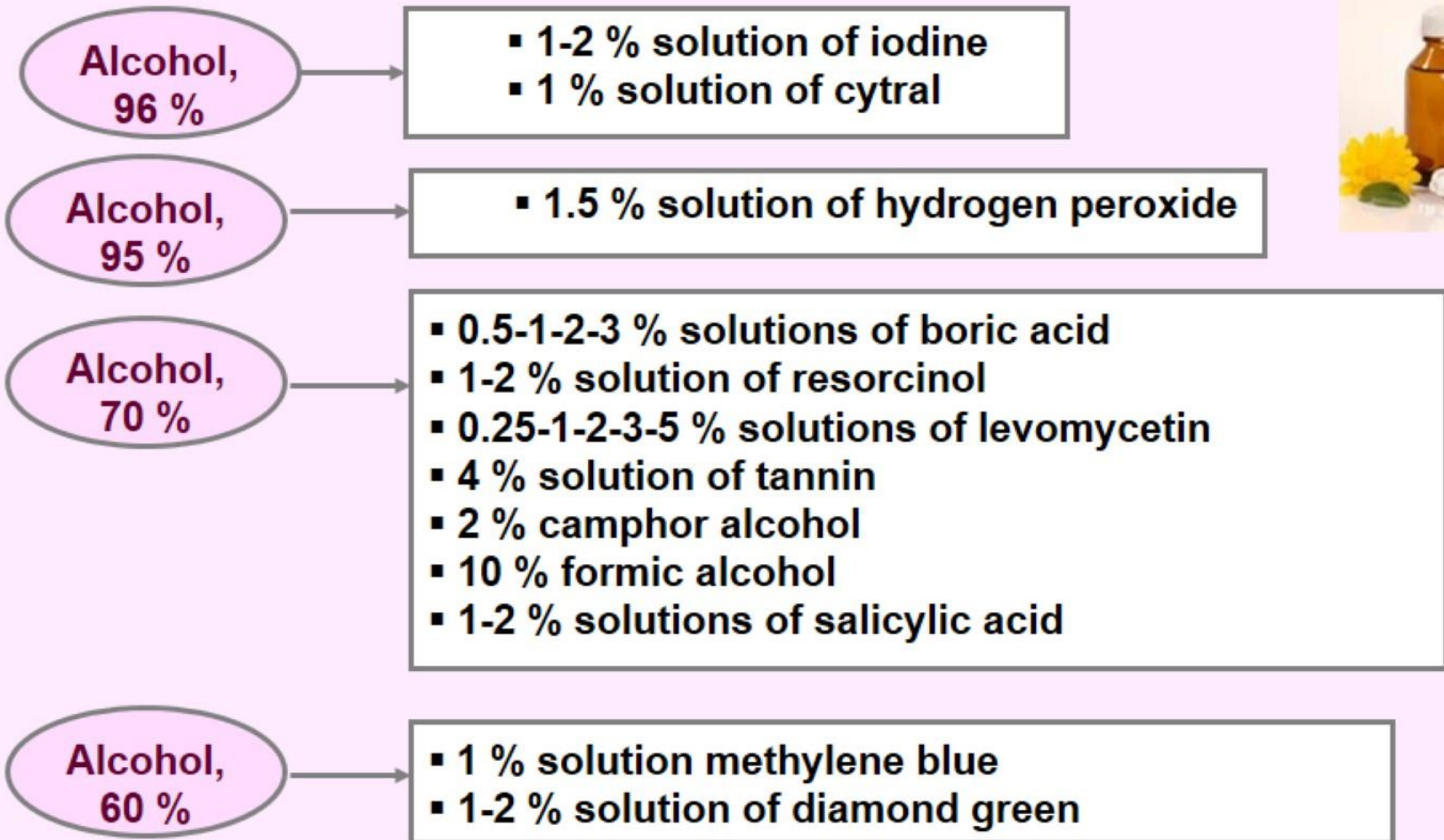


- Prepare solutions directly in the bottles for dispensing.
- Place dry substances into the bottle for dispensing as first, then add solvents (alcohol – by volume; the rest – by weight).
- The straining and filtering stages are undesirable; for volatile substances – heating is undesirable (inflammable).
- Prepare solutions on the dense non-volatile solvents with thermostable medicinal substances by heating of a substance and a solvent together on the water bath up to 50-60 °C.
- Prepare solutions on the dense non-volatile solvents with thermolabile, volatile and aromatic medicinal substances (menthol, camphor, phenol) by dissolving of these substances in the solvent previously heated in the bottle for dispensing up to 40-50°C (the order of dissolving is registered in the front side of WCP).
- If the dental drops with eutectic alloys (menthol, camphor, chloral hydrate, phenyl salicylate) are prescribed, place the substances in the bottle for dispensing, heat on the water bath (at 40°C) until complete dissolution.



## 2. TECHNOLOGY OF ALCOHOL SOLUTIONS

If the concentration of alcohol is not specified in the prescription, **90 %** ethyl alcohol is used, except the cases when concentration is specified by NTD:





## 2. TECHNOLOGY OF ALCOHOL SOLUTIONS

- The **CVI** when dissolving dry substances prescribed in the quantity more than 3 % **is not taken into account** in alcoholic solutions;
- When the concentration of alcohol required is absent in the chemist's, it is prepared from the alcohol with a higher concentration using **alcoholic tables** or calculating the **amount of alcohol according to the formula**:

$$X = V \cdot \frac{B}{A}$$

where: **X** – is the quantity of a stronger alcohol, ml;  
**V** – is the quantity of ethyl alcohol of the required concentration, ml;  
**B** – is the required concentration of alcohol, %;  
**A** – is the concentration of a stronger alcohol has to be diluted, %.



**NB !**

The quantity of purified water by difference of volumes of alcohol of the required concentration and a strong alcohol is not permitted to calculate, because the reduction of the volume of the water-alcoholic solution (the phenomenon of contraction) is not taken into account

## 2. TECHNOLOGY OF ALCOHOL SOLUTIONS

Ethyl alcohol is in chemist's shop on the qualitative-quantitative account; the prescription is made out in addition by seal "Medical establishment". It also remains in a chemist's for 1 year, the drug is made out by "Signature"; on the back side of the prescription recalculation of volumetric units into the weight ones should be performed (as the account is made by weight).

*Rp.: Acidi salicylici 0.3*  
*Spiritus aetylici 30 ml*  
*M.D.S. Wipe skin of the face.*

Doctor's seal

Doctor's

signature

Seal "Medical establishment"



### Technology:

1. Place 0.3 g of salicylic acid directly into the dry bottle for dispensing.
2. Add 30 ml of 70 % alcohol or the calculated amount of 90 % alcohol and purified water.
3. Dissolve while mixing.
4. Close the bottle by a cork and a cover, register for dispensing:  
the prescription number;  
**"Signature"**;  
the additional labels ("Keep in a cool dark place", "Keep out of the reach of children", "Keep out of fire").



### 3. NON-AQUEOUS SOLUTIONS QUALITY CONTROL AND REGISTRATION FOR DISPENSING

#### Quality control

- Written
- Asking
- Visual (colour, smell, taste)
- Dispensing

#### Registration for dispensing

- “Internal” or “External”
- “Keep out of the reach of children”
- “Store in a dark cool place”
- “Shake well before use”



Drops and solutions with poisonous or narcotic substances are sealed up and registered for dispensing by signature and additional label “To be handled with caution”



## ***CONCLUSIONS***

- 1. Non-aqueous solutions were considered.**
- 2. Technology of alcohol solutions was explained.**
- 3. Non-aqueous solutions' quality control was studied.**
- 4. Registration for dispensing was studied .**





***THANK YOU  
FOR YOUR  
ATTENTION!***

