

Pharmaceutical Chemistry Practice
2024/2025 Academic year, 1st semester
Monday 8:00-11:00

DATE	THEME	SEMINAR, REPORT
Week 1 09.02.	<p>EQUIPPING, REVISION OF BASIC ANALYTICAL TASKS</p> <p>Equipping, rules to be observed in the laboratory <u>Burning test</u> demonstration and discussion. Practice: Differentiation between inorganic and organic compounds</p>	<p><u>Literature:</u> The quality control of medicinal compounds</p>
Week 2 09.09.	<p>PRELIMINARY TESTING AND CLASSIFICATION OF INORGANIC AND ORGANIC COMPOUNDS IDENTIFICATION OF INORGANIC DRUGS I.</p> <p><u>Burning and other preliminary tests</u> with model compounds. Practice: Preliminary tests of model compounds, their classification, identification of inorganic drugs Unknown: Identification of 2 inorganic drugs</p>	<p>Reactions of inorganic cations and anions. Preliminary tests. Classification of drugs (organic « inorganic, Salt « not salt, type of salt) <u>Literature:</u> Qualitative analytical chemistry Pharmaceutical Chemistry lecture notes The quality control of medicinal compounds</p>
Week 3 09.16.	<p>PRELIMINARY TESTING AND CLASSIFICATION OF INORGANIC AND ORGANIC COMPOUNDS, ORGANIC FUNCTIONAL GROUPS IDENTIFICATION OF INORGANIC DRUGS II.</p> <p><u>Burning and other preliminary tests</u> with model compounds. Practice: Preliminary tests of model compounds, their classification, identification of inorganic drugs Unknown: Identification of 2 inorganic drugs, classification of 2 organic drugs +functional group</p>	<p>Reactions of inorganic cations and anions. Preliminary tests. <u>Literature:</u> Pharmaceutical Chemistry lecture notes The quality control of medicinal compounds</p>
Week 4 09.23.	<p>GENERAL PURITY TESTS FOR INORGANIC IONS</p> <p>Practice: Limit test reactions in Ph. Eur.: chlorides, iron, sulphates Unknown: <i>Natrii chloridum</i>: purity tests (appearance of solution, iron, sulphates, phosphates) <i>Borax</i>: purity tests (pH)</p>	<p>Theory and practice of purity tests in Ph. Eur. <u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>

<p>Week 5 09.30.</p>	<p>DETERMINATION OF PROTONATION MACROCONSTANTS</p> <p>pH-potentiometry: - direct method: titration of ascorbic acid UV - pH titration: benzocaine (in small groups)</p> <p>Calculation of the mole fraction of macrospecies as a function of pH (personal task)</p>	<p>PROJECT REPORT (weeks: 2–4.)</p>
<p>Week 6 10.07.</p>	<p>DETERMINATION OF ORGANIC FUNCTIONAL GROUPS</p> <p>Practice: Identification of organic functional groups in model compounds Unknown: Classification of 2 organic molecules and determination of their functional groups</p>	<p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>
<p>Week 7 10.14.</p>	<p>MAJOR ANALGETICS</p> <p><i>Morphini hydrochloridum, Codeini hydrochloridum, Codeini phosphas, Ethylmorphini hydrochloridum, Papaverini hydrochloridum</i></p> <p>Practice: identification of the listed compounds</p> <p>Identification: 1 organic compound Assay: 1. Codeine phosphate: acidimetry in nonaqueous medium 2. Codeine hydrochloride + papaverine hydrochloride containing powder mixture</p>	<p>1. Midterm retake (weeks:2-4.) (the exact date will be discussed)</p> <p>Structure and chemical characteristics of the listed compounds. Nonaqueous titrations.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>
<p>Week 8 10.21.</p>	<p>MINOR ANALGETICS</p> <p><i>Acidum salicylicum, Natrii salicylas, Acidum acetylsalicylicum Phenazonum, Metamizolum natricum, aminofenazon Paracetamolum</i></p> <p>Practice: identification of the listed compounds</p> <p>Identification: 2 organic compounds Assay: 1. Salicylic acid: alkalimetry 2. Phenazone: iodometry</p>	<p>Structure and chemical characteristics of the listed compounds.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>

<p>Week 9 10.28.</p>	<p>NON-STEROIDAL ANTIINFLAMMATORY DRUGS <i>Diclofenacum natricum, Ibuprofenum, Indometacinum, Phenylbutazonum, Piroxicamum</i></p> <p>Identification: 1 organic compound Assay: 1. Phenylbutazone: nonaqueous titration of acids 2. Diclofenac sodium: nonaqueous titration of bases</p>	<p>Structure and chemical characteristics of the listed compounds. Nonaqueous titration of acids.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture</p>
<p>Week 10 11.04.</p>	<p>DETERMINATION of logP</p> <p>Determination of logP: - by traditional method (direct determination) - by TLC, HPLC (indirect determination)</p>	<p>PROJECT REPORT (weeks: 5–9.)</p>
<p>Week 11 11.11.</p>	<p>LOCAL ANAESTHETICS <i>Cocaini hydrochloridum, Benzocainum, Procaini hydrochloridum, Tetracaini hydrochloridum Lidocainum</i></p> <p>Practice: identification of the listed compounds</p> <p>Identification: 2 organic compounds Quantitative determination: Nonaqueous titration of basic compounds in the presence of neutral materials: Ung. anaestheticum (lidocaine)</p>	<p>Structure and chemical characteristics of the listed compounds.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>
<p>Week 12 11.18.</p>	<p>SEDATO-HYPNOTICS, ANXIOLITICS <i>Chlorali hydras, Chlorobutanolum, Ureum, Barbitalum, Phenobarbitalum, Phenobarbitalum natricum</i> <i>Alprazolamum, Diazepamum, Medazepam, Midazolamum, Nitrazepamum</i></p> <p>Practice: identification of the listed compounds</p> <p>Identification: 2 organic compounds TLC identification of benzodiazepin containing tablets Assay: Phenobarbital: alkalimetry, potentiometric end-point detection</p>	<p>2. Midterm retake (weeks:5-9.) (the exact date will be discussed)</p> <p>Structure and chemical characteristics of the listed compounds.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>

<p>Week 13 11.25.</p>	<p>DRUGS EFFECTING THE VEGETATIVE NERVOUS SYSTEM</p> <p><i>Pilocarpini hydrochloridum, Physostigmini salicylas, Atropini sulfas, Homatropini hydrobromidum, Homatropini methylbromidum, Hyoscini hydrobromidum, Adrenalini tartras, Ephedrini hydrochloridum, Isoprenalini hydrochloridum, Noradrenalini hydrochloridum</i></p> <p>Practice: identification of the listed compounds</p> <p>Identification: 1 organic compound</p> <p>Quantitative determination:</p> <ol style="list-style-type: none"> 1. Ephedrine hydrochloride + Codeine hydrochloride containing powder mixture 2. Tabl. Rhinatiol Cold (ibuprofen + pseudoephedrine HCl) 	<p>Structure and chemical characteristics of the listed compounds.</p> <p>Nonaqueous acidimetry in multicomponent mixtures</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>
<p>Week 14 12.02.</p>	<p>PSYCHOPHARMACONS</p> <p><i>Chlorpromazini hydrochloridum, Levomepromazini hydrochloridum, Promethazini hydrochloridum, Flufenazini hydrochloridum, Imipramini hydrochloridum, Quetiapini fumaras, Tiapridi hydrochloridum,</i></p> <p>Identification: 1 organic compound</p> <p>Identification of phenothiazines and tricyclic antidepressants by TLC</p> <p>Assay:</p> <ol style="list-style-type: none"> 1. Quetiapine fumarate: quetiapine: nonaqueous acidimetry + fumaric acid: alkalimetry 	<p>PROJECT REPORT (weeks: 10-13.)</p> <p>Structure and chemical characteristics of the listed compounds.</p> <p><u>Literature:</u> The quality control of medicinal compounds Pharmaceutical Chemistry lecture notes</p>

List of inorganic compounds for identification

Acidum boricum
Alumen
Aluminii chloridum hexahydricum
Aluminii sulfas
Ammonii bromidum
Ammonii chloridum
Bismuthi subnitras ponderosus
Borax
Calcii carbonas
Calcii chloridum hexahydricum
Calcii hydrogenophosphas dihydricus
Calcii sulfas
Dinatrii phosphas dodecahydricus
Kalii bromidum
Kalii carbonas
Kalii chloridum
Kalii iodidum
Kalii nitras
Kalii sulfas

Magnesii chloridum hexahydricum
Magnesii subcarbonas levis
Magnesii sulfas heptahydricus
Natrii bromidum
Natrii carbonas decahydricus
Natrii chloridum
Natrii dihydrogenophosphas dihydricus
Natrii hydrogenocarbonas
Natrii iodidum
Natrii metabisulfis
Natrii nitris
Natrii sulfas decahydricus
Natrii thiosulfas
Zinci oxidum
Zinci chloridum
Zinci sulfas heptahydricus