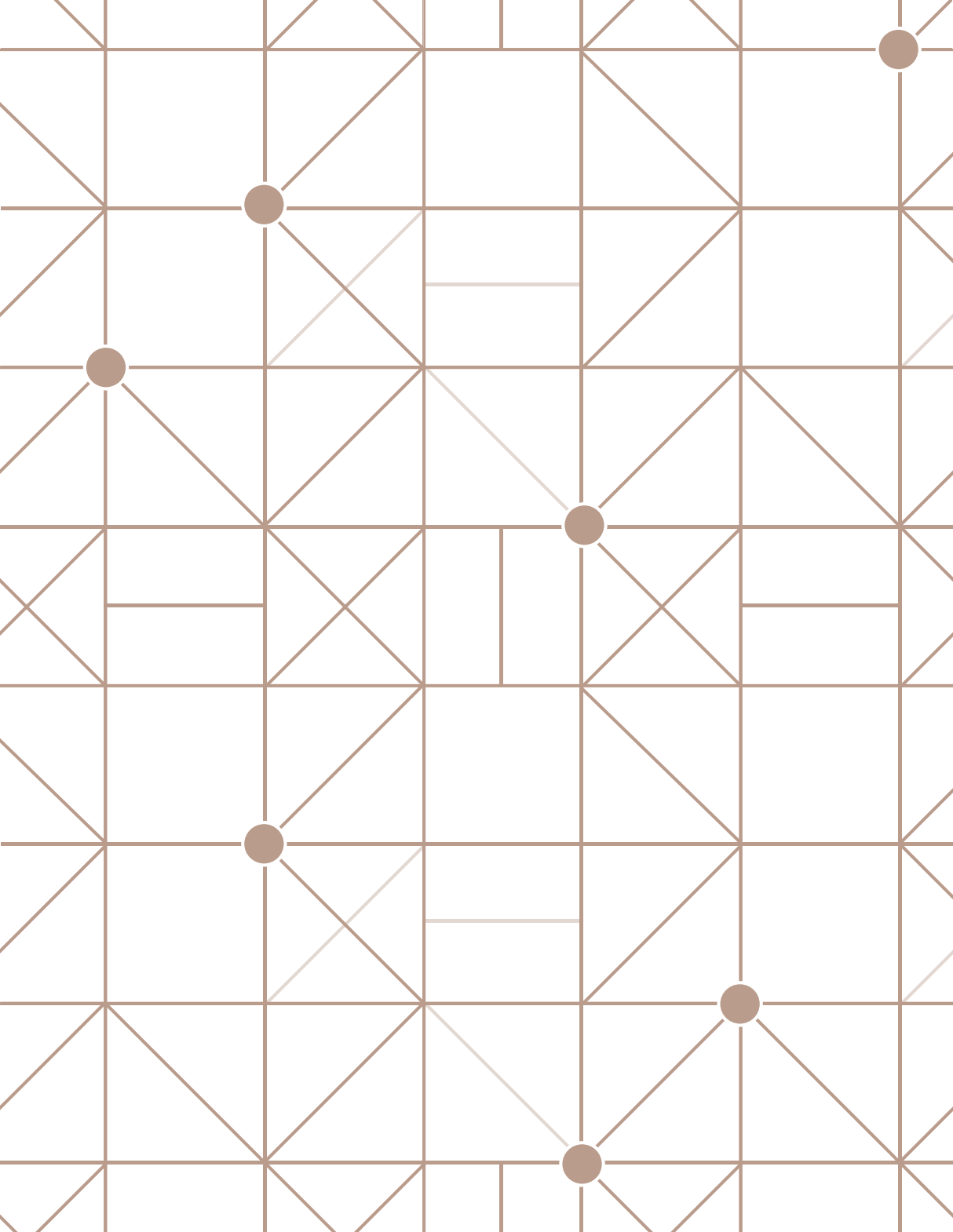

1

INTRODUCTION

تبيف — مهم

Defintions

- **pharmacology:** The science that deals with the interaction of drugs and living system
  These interaction may leed to the beneficial(+) effect / defective function

- **Drugs:** Chemical substances that show biological activeties
  - ↓ Treatment **or** ↓ Diagnosis
  - (Radiosotope to make a bitscan) (To make a Contrast) / استخدام مواد يؤثر بشكل سلبي و غريب مش يوجد مشاكل لدى الشخص بحيث يتم تشخيص المرض

- **Target organ-tissue of drug action:** main tissue-organ on wich the drug acts, and for wich its used therapeutically.

- **pharmacotherapeutic:** The proper (المناسب) use of drug in treatment a disease in man
  (Dispensing the drug properly) — صرف الدواء المناسب
  يكون كل شيء فيه بالتفصيل الممل

- **Clinical pharmacology:**
  - ① → Drug pharmacology
  - ② → Clinical evolution of Drugs in treating disease
    - ↓① Clinical Trails
    - ↓② surveillance (مراقبة) studies (Side effect - Result of drug)

- **Chemo therapy:** To imply the use of drugs
  - ↓① inhibit growth
  - ↓② Kill

Ex :-
1) Anti-microbial agents → Microbes (Anti-biotics)
2) Cyto-toxic anti-Cancer drugs → Cancer cells

- **pharmacy:** The science + profession that deals with
  - preparation
  - storage
  - dispensing (التخلص)
  - proper utilization (الاستخدام السليم)

  of drug products

- **Toxicology:** The science that deals with the harmful effect of chemicals (Drugs)

Devisions

Codynamic

Drug → Body (living tissue-system)
action

1 include ⑤:
- ① Type
- ② quantitave aspect ← (namely × just) →
- ③ mechanism
- ④ quality — inhibit ↓↑ (Doses)

2
- ④ - Adverse effect (-) Defective
- ⑤ - Safe effect (+)

CoKinetics

Body → Drug
(administration) — طريقة العمل

1- Distrigration (Degradation)
2- Absorbtion
3- Distribution in the blood
(going to the target tissue → Control its enzymes)
4- Elimination by
- Metabolism ①
- excretion ②

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prodrug: It's a non-active drug that after administration and reach the traget organ (attached by E-protein) is metabolized into an active drug

- **Rational drug design:**
  USE → Implies the ability of predict a chemical structure of Drug on basis of 3D structure of it's receptor

- In the past: Most drugs developed through :-
  1. Testing of chemicals
  2. Modified molecules of Known drugs

- Only few drugs: In clinical use at present were developed in this Rational way

- ↑ More Know about detailed structure of receptors
  ↑ Rational drug design become more feasible

Drug Sources 1 2 3

	Synthatic	Semi-Synthatic	Natural	
			Organic (1,2,3 → pharmacognosy)	Non-Organic
Using	Common at present	—	Less used now	
Source	prepared by labs + Factories of the pharmaceutical industry → Nowadays: Computers → greatly assit in descovery of new drugs تحاكي بعمل على محاولة ربط جميع الأدوية مع البروتين الموجود (الدواء على شكل 3D) على يحقق هذه الأدوية الفاعلية Rational Drug design → 3D computer program	obtained from natural Source, but modefied by pharmaceutical industry → reason: To improve their 1) physical properties 2) chemical properties 3) pharmacological activeties	○ plants: any part of the plant (6) - stem - leaves - flowers - roots - seeds → Used: to Extract active intergradients (some plant may contain more than one active principle) → Ex: alkaloids, steroids, vitammins, tannins, gums, volatile oils (eg: 6)	○ Metals: 1) platinium → Cisplatin Use: Treat a variety of Cancers 2) Zinc → Zinc-oxide Use: wound sterilizer (مرهم زنك)

• **Alkaloids**: small organic molecules contain nitrogen (N)
Ex: (5)
- Atrophine
- Caffeine
- morphine
- theophylline
- quinine

EX → Anti-Malarya

• **Source of Insulin**: Natural – Organic – ① Animal or Microbes ②

○ **Animals**: (7) include
- proteins, Some vitammins, Oils, Hormones
① Anti-sera (serum), Enzymes from exocrine gland
Vaccines

○ **Microbes**: From
1) Fungi
2) Bacteria: source of ② Anti-bodies

○ **non-Metals**
1) Sodium chloride → Normal saline
2) Magnesium sulfate → Anti-Acidoses

Drug Classification

1 2 3 4

- No fixed rule. → Calssification (x use / source) دوائي

Therapeutic use

1. Anti-hypertensive — vasodilator (توسيع / كدوائي)
2. Anticoagulants
3. Anti-microbal
4. Anaesthetics مخدر
5. Hypoglycemic drugs

Type of pharmacological action:

- Type of action: (Target organ)
  - → local — general anaesthetics
  - → Vasodilator — Anti-Coagulants
  - → Cellular — Molecular (site of action in target cell:)
- Ex:
  1) Enzyme inhibitors
  2) Inhibitors of transport
  3) Ion channel blockers
  4) Receptor blockers
  5) Antimicobails

1	2	3	4	5

acting on
1- Cell wall
2- DNA
3- Ribosome

most commonly used now

physiological system

on which they act:

* each drug act on different system

- Ex: Some drugs act on:
  - → CNS
  - → GIT
  - → Respiratory system
  - → Cardio-vasular system

Drugs derived from **Nature**: It's name is inculde →
- plant species - Genus - Drug chemistry

Ex: plant chemistry plant chemistry
- Belladona Alkaloids ↓ Atropa Belladona (chemistry)
- Digitalis glycosides ↓ Digitalis leaves

Chemical nature - source:

Common chemical groups - structures

Use:

To classify drugs that have similarity in their pharmacological profile

≠ مضادات اكتئاب

Ex: ① Steroids — ② benzodiazepines

- All steroids have the same chemical structure (nucleus) (Different is in the sidechains)
- [panado] → Caffiene; → parastmole in → [panda ...]

ليست بدائل إنما نفس الدواء

Drug Names

1 2 3

1 Chemical :- (just one name for every drug)

- Not usually used Because→ of it's Complexity
- Sometimes : Shorthand name (simple chemical structure) Based on→ Simple chemical structure is employed.
- Examples : ① Acetylsalisylic acid → Aspirin
  ② Acitaminophen → parectamol — Tylenol

chemical name — Generic name — Trade name

2 Generic (non-proprietry) :-

(يكون على هيئة المواد تحت الاسم التجاري)

- It's a ① Unique name from→ pharmaceutical bodies [present in pharmacopoeias BP-USP]
- the ② approved scientific name Must used in→ ① scientific publication — ② prescriptions esp in hospital
  It's easier for pharmacist to choose from many available brands of same drug ← reason
- Few drugs have more than one generic name :

Ex : ① US, who : Noradrenaline
UK : Nor-epinephren

② Albuterol
Salbutamol

- Generic names of drugs in a classefied group have→ Common ending

Ex ① olol → Beta-Adrenoceptor blockers (In heart-Traget organ)
② Caine → local anaesthetic drugs

→ Benifits : give a hint about pharmacotherapeutic action

3 Commercial-Trade-properietry-brand :-

- It's name from a specific pharmaceutical Company who→ synthesizig/marKeting
- Ex : 1) Voltaren 2) Inflaban 3) Diclogesic 4) Diclofenac — Same drug —
  A single drug can have many brand names (It's Confusing)

reason → Due to it's manufacture and marKeting by many pharmaceutical

Drug

Doses

Important (in pharmacokynatics) ↩

↳ Converted the drug to suitable form (Dosage)

- The physical form of drug product that is suitable for administration to man
  It's contain specific Dose – amount of drug in a specified quanity or unit of the formulation.

Oral

⑤ → Degradation in first of :-
- 1/2 Duodenum
- 1/2 jejunmus

- pill → Capsules, Tablets
- liquid → Syrup طعم حلو, Suspension
- powder
- Herbal plant → seeds, etc....
- pastes معجونات

Inhalational

- Aresol بدون كمية محددة (حوالي الوقت)
- Inhaler في كمية محددة specific Dose → Ex : Ventolin
- Vaporizer (Solutions) يستخدم في حالة الأطفال

Parenteral بالحقن

Intradermal	ID
Intramuscular	IM
Intra venous	IV
Intrathecal	IT بالظهر
Intraperitoneal	IP بالبطن
Subcutanous	SC

Topical

- Cream, gel, Ointment, lotion
- Eye drops (ophthalmic)
- Eyedrops (otic)
- skin patch (Transdermal) لزقات

Suppository

- Vaginal
- Rectal

Abbreviations :

pharmacopeis	SIB – USP The United States Pharmacopoeia
Intradermal	ID
Intramuscular	IM
Intravenous	IV
Intrathecal	IT
Intraperitoneal	IP
Subcutanous	SC

Examples :

Trade name	Chemical name	Generic name
Tylenol	acetaminophen	parectamol
—	acetylesalisylic acid	Aspirin
Voltaren	—	Diclofenac Sodium

* The type of the Dose of drug to a child :

a) Inhaler b) Vaporizer c) Aresol