

PHARMACOLOGY

DOCTOR 2019 | MEDICINE | JU

Done By: Lubna Alnatour & Leen M Hadidi.

Introduction pharmacology part 2.

Dr Malek Zihlif

PhD of Molecular Pharmacology

Let's continue this lecture with some more definitions..

– **Drug habituation:** denotes a mild form of psychological dependence.

Some people take drugs without a specific reason.

So for example, a female who used to take brufen frequently as a painkiller for headache (during a specific period of her life due to some reason) continues to take it after this period although she doesn't need it, but because she got used to it.

This is drug habituation, note that she's not totally and emotionally dependent on it. So if she stopped taking it there'll be no physiological nor psychological dependence.

This can be considered as a form of drug misuse.

This is different from drug dependence (this is less serious), the person is less dependent on it.

بمعنى (التعويد على الأدوية) ، الاعتماد لا يكون كلياً مثل التدخين أو تعاطي المخدرات والحشيش على سبيل المثال.

– **Illicit drug:** also called street drug are those sold illegally.

These drugs could be sedatives, analgesics and other types.

They have weird names that are used between drug dealers and the customers. So for example, "Joker" is commonly sold as an illicit drug in Jordan as well as "Cocaine".

Another example is Methamphetamine.

الناس الي بتتعاطى مخدرات ومهدئات و مسكنات وغيره بشكل غير قانوني ، وهذا المصطلح يطلق على هذا النوع من الأدوية غير القانونية.

Drug Naming

- **Chemical Name** - describe chemical structure (rarely seen in medical literature)

This is commonly used among pharmacists and people who manufacture drugs because it describes the chemical composition of the drugs. And it's not used among doctors.

- **Generic Name** - a name assigned to drug that can be used by anyone (not proprietary)

This is the name that is given by the company who first discovered and produced the drug. For 20 years, this company would be the only company that can produce and sell this specific drug. Because after 20 years the product will no longer be the sole intellectual property of this particular company.

بمعنى إنه الشركة الأولى في تصنيع دواء معين بتطلق عليه هاد الاسم و بتكون الشركة الوحيدة إلي بتصنعه لمدة ٢٠ سنة وهي المدة إلي بتكون الشركة فيها محمية بحقوق الملكية الفكرية، بعدها بصير مسموح باقي الشركات تصنعه وتعطيه أسماء ثانية من عندها إلي هي:

- **Trade Name** - Proprietary name given to the drug by the manufacturer

The names given by companies manufacturing a specific drug that they didn't discover. الاسم التجاري
For example, Paracetamol is the generic name. Other trade names for it are: Panadol, revanin, adol, fevadol.

So names differ according to the company that sells this specific drug.

Why is this important to know?

- The name that should be used while writing a prescription is the generic name. It's not the doctor's responsibility to decide which company the patient should buy the drug from.
- General Notes from students' questions:
- From experience and post market surveillance, drugs who have the same generic name (almost same composition) but are produced by different companies have different effects.
- The most toxic, used drug with very little side effects is paracetamol. But How? This is due to different trade naming.
- Drug habituation may cause tolerance (desensitization), meaning that the receptors of the drug that is frequently taken decrease their responsiveness to the drug even when present at high conc. . But not all drugs cause tolerance.

Table 1-1

EXAMPLES OF DRUG NOMENCLATURE

Chemical	Generic (Nonproprietary)	Trade/Brand-Name (Proprietary)
<i>N</i> -Acetyl- <i>p</i> -aminophenol	Acetaminophen <u>Or Paracetamol.</u>	Tylenol, Panadol, many others
3,4-Dihydroxyphenyl-L-alanine	Levodopa	Larodopa
5,5-Phenylethylbarbituric acid	Phenobarbital	Luminal, Eskabarb
7-Chloro-1,3-dihydro-1-methyl-5-phenyl-2 <i>H</i> -1,4-benzodiazepin-2-one	Diazepam	Valium

You don't have to memorize any of these names nor the names in the previous examples. Just understand the concept ☺ .

Over the counter

Are they effective?????

Are they safe?????

do they have interactions???????

do they have contraindications?????

Over the counter

Over the counter medications: are the medicines that are being sold without a requirement for a prescription from a healthcare professional.

***you can go to any pharmacy or supermarket and simply buy them even if you don't have a prescription ,just like Panadol, and this is what we mean by OTC drugs.

Are the OTC drugs effective? Yes.

Are they safe? No.

Do they have drug-drug interactions? Yes.

Do they have contraindication? Yes.

- Why are they over the counter? Because we used to consider them as OTC and we can't change that anymore.
- Actually one of our problems in Jordan that antibiotics are considered as OTC and this is so wrong.

An example:

Although Voltaren has drug-drug interactions and it is contraindicated for those who have peptic ulcer (because it is an inhibitor of prostaglandins in the stomach and in the kidneys) and asthma and it might cause a kidney failure it is an OTC.

***because that we say the OTC is not safe.

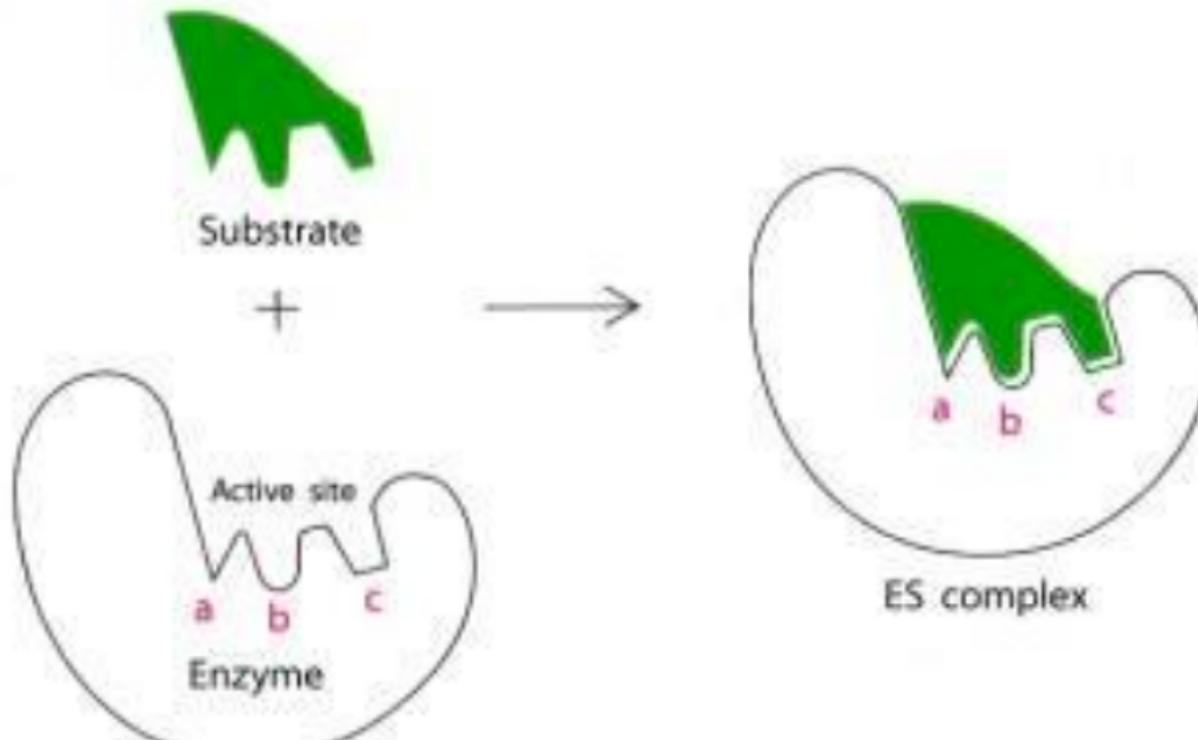
Our responsibility as a doctors is to understand the effectivity and the safety of these drugs and to spread awareness between people about that.

- Note :

If we have drug-drug interaction we can just change the doses to prevent the interaction between them or we can replace one drug by another.

- **we change the doses if the drug was a “single drug” which mean that it is an irreplaceable drug.

Model of Drug/Receptor Binding



The changing in configuration of that receptor after binding may be induction or inhibition of that enzyme.

Major receptor families :(conventional targets for the drugs)

- Ligand-gated ion channels.
- G protein-coupled receptors.
- Enzyme-linked receptors.
- Intercellular receptors. It might be :
a-in the cytosol. b-part of the genome. c-on the chromatin.
e-the mRNAs.

Note: pharmacodynamics (how drugs work) strongly rely on receptors.

- Any change in these receptors will produce a biological change, and the process of binding the drugs to the receptors is called **biological transduction** (ترجمة دوائية).

- An example:

Diclophenac (a common trade name for it is Voltaren) which involves inhibition of cyclooxygenase (COX-1 and COX-2) and that way it is a potent inhibitor of prostaglandin synthesis that act as an analgesic, antipyretic (يخفض الحرارة) and anti-inflammatory.

I might have one biological transduction or it might be 100 biological transduction of the same drug.

Ligand-gated ion channels

- Responsible for regulation of the flow of ions channels across cell membranes.
- Regulated by binding of a ligand to the channels.
- The best example being the nicotinic receptor, in which the binding of the acetylcholine results in sodium influx and the activation of contraction in skeletal muscle.

I can get benefit of that by producing a drug similar to acetylcholine in order to produce an action potential and then an effect.