

Semester II.

Pharmacology

Laboratory 5

ANTIBIOTICS

Antibiotics

- 1. Pharmacognosis**
- 2. Laboratory**
- 3. Pharmaceutical technique**
- 4. Pharmacography**
- 5. Classification**

2. Laboratory

Determining the sensitivity of microbial germs to antibiotics (antibiogram)

Antibiotic micro-tablets with antibiotics are used for this antibiogram method. The table below shows the type of antibiotics from the micro-tablet, the amount contained and the initials used for each of them.

Antibiotic	Concentration	Symbol
Penicilinã G	10 U.I.	P
Penicilin V	10 U.I.	PV
Streptomycin	10 mg	S
Chloramfenicol	50 mcg	C
Eritromicin	15 mcg	E
Neomicin	30 mcg	N
Tetraciclin	30 mcg	T
Polimixin B	300 mcg	Po

The 8 tablets have the advantage that they can be stored for a long time (2 years), they are sterile, they are made industrially, they are easy to read and they allow 20-25mm zones of inhibition.

Procedure. Petri dishes with a diameter of 10-12 cm are taken, in which pour 10 ml medium prepared from jelly (2% pepton, at a pH = 7.4). For germs that require special nutritional conditions (streptococcus, pneumococcus, Listeria) add to the environment, blood and glucose in appropriate proportions.

A broth culture, 24 hours old, diluted 1/1000, is used as an inoculum, which spreads evenly on the surface of the medium, the excess being then removed with a Pasteur pipette. Allow the plates to dry with the lid open for 15 minutes near the gas bulb, then with the aid of a feather, place the microcompresses in the medium. It is left to stand for 2 hours, during which time it is necessary for the antibiotic to be diffused into the environment, after which it is incubated for 18-20 hours at the thermostat, at 37 ° C.

The interpretation of the results

is done by measuring the zone of inhibition produced under the action of the antibiotic.

Very sensitive =

diameter of the inhibition zone over 20 mm.

Sensitive =

diameter of the inhibition zone between 10-20 mm.

Resistant =

diameter of the inhibition zone below 10 mm.

3. Pharmaceutical technique

Preparation of penicillineye drops

Take a bottle of 200,000 U.I. crystalline penicillin G and a vial of 10 ml saline. The vial is opened and the contents are sucked into a sterilized syringe by boiling.

Insert the physiological serum into the penicillin vial through the stopper, after which the needle is removed. The mixture is stirred until it is completely dissolved and the solution thus prepared can be used as an eye strain in animals.

Preparation of the penicillinated ophthalmic ointment

Rp/

Penicillini crist.	200.000 U.I.
Aq. Distill.	2.0
Adipis lanæ anhydrici	
Paraffini liquidi	aa 10.0
Vaselini albi q.s.ad	100.0

M.f. ung.

D.S. ext.

Melt lanolin and paraffin oil together in the water bath. Filter hot through filter paper into a porcelain capsule. It is then sterilized on the thermostat for one hour at 160 ° C.

In a sterilized mortar in the oven, the penicillin dissolved in the 2 ml of distilled water is placed under aseptic conditions. Immediately add the sterilized mixture of lanolin, petroleum jelly and paraffin oil which were brought to the thermostat at 35-40°C. It is soaked under aseptic conditions and after preparation it is placed in a glass jar or porcelain previously sterilized and closed with a lid. No chemical means are used in sterilization as they can inactivate penicillin. For the same reason, metal utensils are not used in the preparation. The penicillin ointment thus prepared, is used in the treatment of ocular disorders. However, they can also be used at the skin level in local lesions.

Schematic spectrum of the main antibiotics and chemotherapeutics

Substance	Cocci Gram +	Cocci Gram -	Bacilli Gram -	Bacilli Gram+	Actino-micetes	Kock Bac.	Spirils	Rickettsia	Great viruses	Protozoa
Sulphonamides	++++	++++	++	++++	++++	-	-	-	++	-
Penicilins	++++	++++	-	++++	++++	-	++++	-	-	-
Streptomycin	++++	++++	++++	++	-	++++	-	-	-	-
Chloramfenicol	++++	++++	+++	++	-	-	-	++++	++++	++
Tetraciclins	++++	++++	+++	++++	++++	-	++++	++++	++++	++
Erithromicin	++++	++++	+	++++	-	-	-	++++	++++	++
Neomycin	++++	++++	++++	+	-	++++	-	-	-	+
Polimyxins	-	-	++++	-	-	-	-	-	-	-
Isoniazide (chimioterapic)	-	-	-	-	-	++++	-	-	-	-

4. Pharmacography

Rp./

Penicillini crist. 200.000 U.I.

D.t.d. X

S. ext i.m. 2 x 100.000 U.I./day, to dog

Rp./

Efitard flasks V

D.S. ext 1/day, inj. i.m la porc

Rp./

Streptomycin sulphate 1.0, flasks III

D.S int. 1/zi to calf dissolved in tea (local)

Rp./

Asocillin ointment tubes od 10g III

D.S. ext. for intramammary use to cow

Rp./

Tripedin flacoane VIII

D.S. ext inj. i.m. 2/zi to cow

Rp./

Tetraciclina Compr. of 0.250 XVI

D.t.d. XVI

S. Int. 4 x 1/day to calfs

Rp./

Cloramfenicol Compr. 0.125 XII

D.t.d. XII

S. Int 4x 1/day to dog

Rp./

Reverin I flask of 100 ml

D.S. ext inj. i.m., 20ml /day to cow, for 5 days

Rp./

Galisan flask of 100 compr. I

D.S. int. 1 compr. /day to chicken for 3 days

5. Classification

Antibiotics (main vet.)		
Group	Subgroup	Representatives
Penicilins	Naturals	Penicillin G (salts: of sodium, potasium, esters: procainic, dibenzil-ethilenediamide);
	Associated	<i>Tripedin, Efitard (penicilin); Propamicin, Asocilin (with streptomycin); Omnamicin (with chimioterapics); Tardomiocel (with sulphonamids)</i>
Oligosacharide		<i>Streptomicina; Neomicina, Framicetina, Kanamicina, Gentamicin, Paromomicin</i>
Tetracyclins		Tetraciclina, Aureomicina, Tetramicina, Vibramicina
Macrolids		Metaciclina, Spiramicina, Carbomicina, Oleandomicina, Tylocina, Stafilocilina,
Polipeptides		Colimicina, Polimixinele, Bacitracina, Tirotricina
Chloramphenicol		Chloramphenicol