



CHEMISTRY IN EVERY DAY LIFE

MODULE-3/5

ANTIMICROBIALS

- .Drugs which tend to destroy/prevent development or inhibit the pathogenic activity of microbes such as bacteria, virus, fungi, or any other parasite.
- 2.They are anti bacterial, anti viral, antifungal or anti parasitic depending on which microbe they act on. The commonly used antimicrobials are- antibiotics, antiseptics and disinfectants.
- 3. Definition of Antibiotics- :-
 - Previously defined as chemicals produced by microbes to inhibit or destroy micro-organisms.
 - New definition- Substances produced wholly or partly by chemical synthesis, which in low concentrations inhibit growth or destroys micro-organisms by effecting the metabolic activity of microbes.

History of discovery of antibiotics

- History-Noble laureate Paul Ehrlich a German bacteriologist– Discovered first antibacterial SALVARSAN for treatment of syphilis caused by bacteria spirochete.
- Prontosil drug- First synthesised drug containing -N=N- (azo-dye). This gets converted to an active compound sulphanimide and thus sulpha drugs were discovered.
- Revolution in antibacterial therapy
- Discovery of penicillium by Alexzander Fleming

Antibiotics

- Classification:
- i) Based on action they have on microbes

Bactericidal
Kills the microbes in
the body
Ex-PAO
Penicillin,
Aminoglycosides
ofloxacin

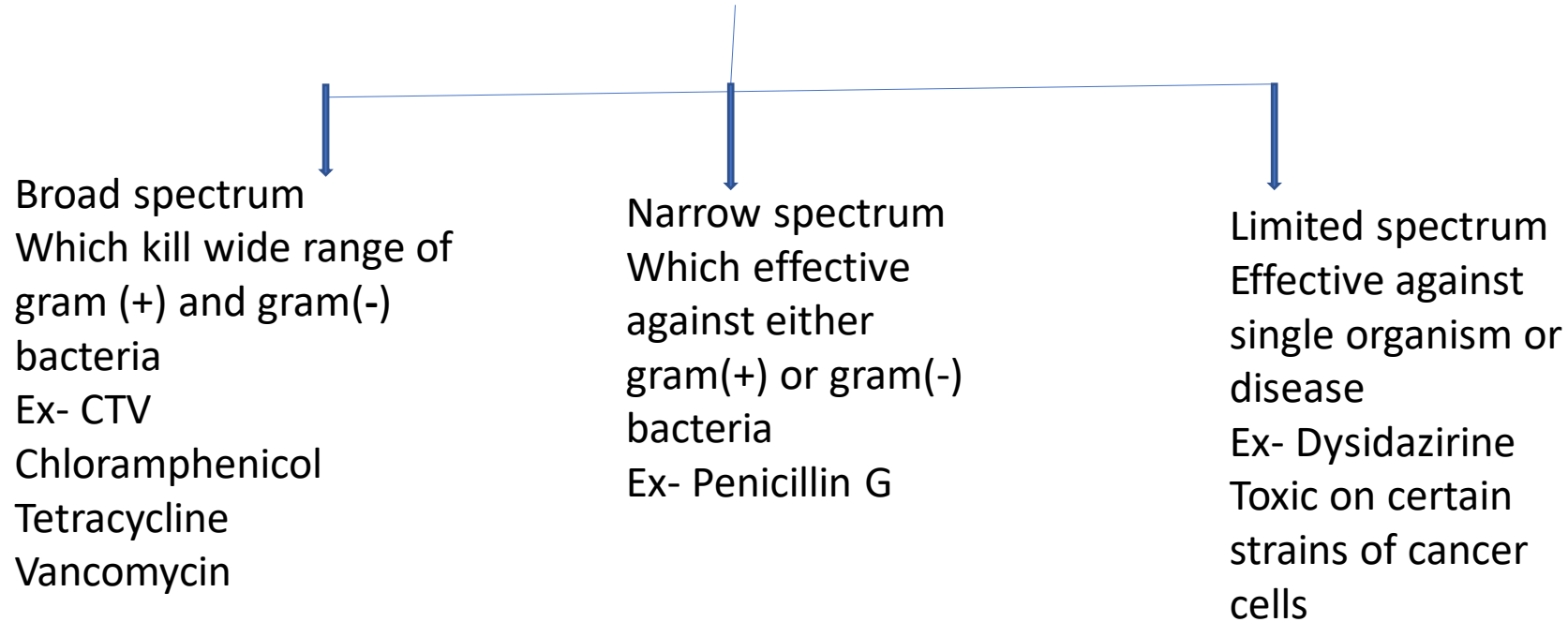
Bacteriostatic
Inhibits the growth
of microbes
Ex- ETC
Erythromycin
Tetracycline
Chloramphenicol

Antibiotics

- **Classification**

- Based on the range of bacteria on which effect is observed- Spectrum of antibiotics

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Antiseptics

- Chemicals which either kill or prevent growth of micro-organisms on living tissues.
- Ex: Furacine, Soframicin etc.
- Commonly used ones are: i) Dettol- It is a mixture of Chloroxylenol and Terpineol
- ii) Tincture of iodine- Iodine- 2-3% solution in alcohol-water mixture
- iii) Bithionol- added to soaps to impart antiseptic properties.
- iv) Iodoform- produces Iodine on contact with skin which is antiseptic.
- v) Hydrogen peroxide (Perhydrol), vi) Savlon- Solution of chlorhexidine gluconate and cetrimide
- vii) Salol- Phenyl salicylate viii) KMnO_4 ix) Alcohol etc
- x) Boric acid- Dilute solution is antiseptic for washing eyes & boric acid powder is used in antiseptic baby powders.
- Some organic dyes are effective antiseptics and used of infectious diseases. Ex: Methylene blue & Gentian violet.

Disinfectants

Disinfectants- Chemicals which either kill or prevent growth of micro-organisms on inanimate things such as floors, instruments, drainage system etc.

Ex: i) 1% solution of phenol

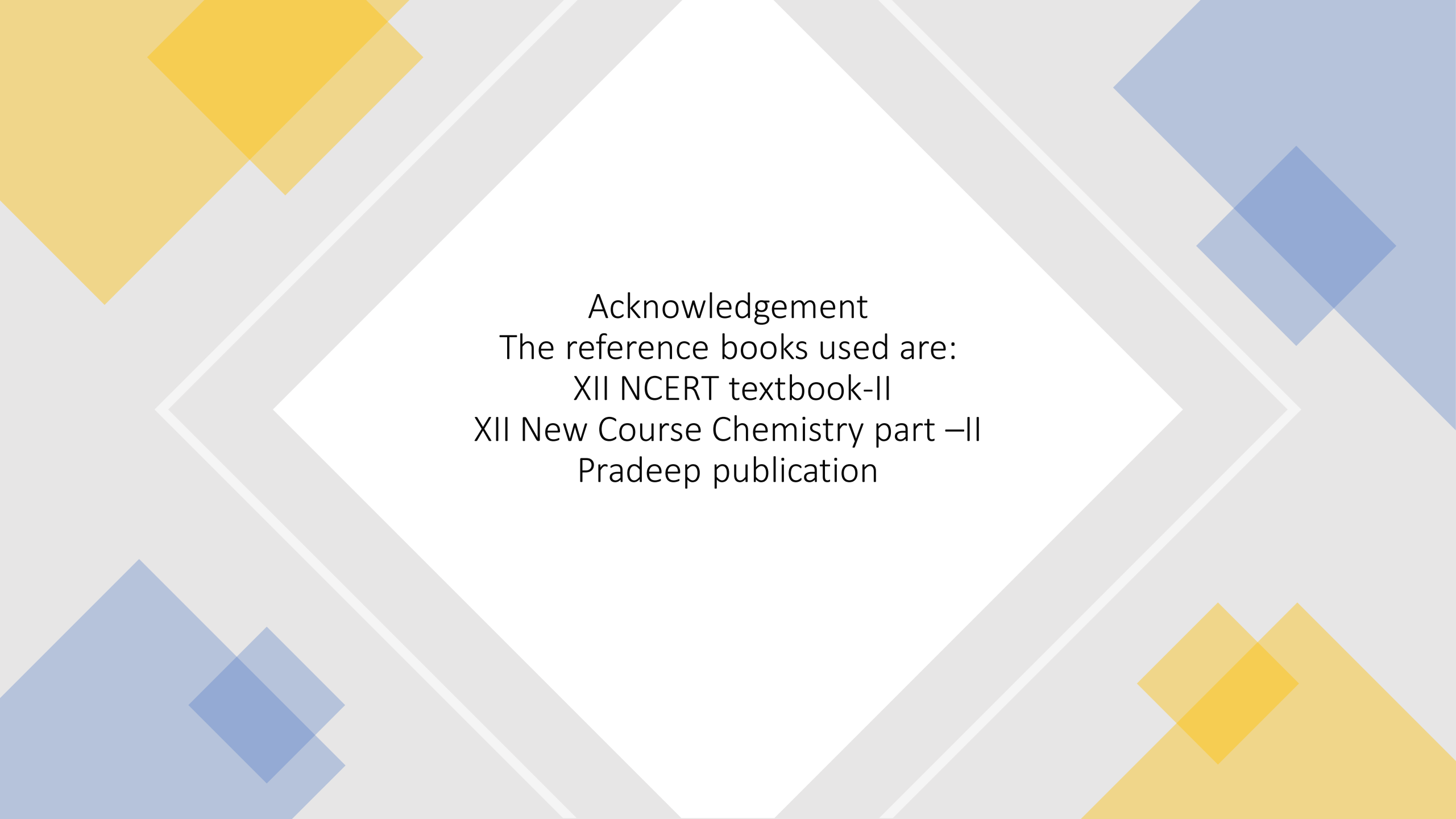
ii) 0.2-0.4ppm of aq. Solution of chlorine

iii) Lysol – ortho, para & meta cresols

iv) aq. solution of SO₂

Antifertility drugs

- The need for antifertility drugs- brief idea
- Chemical substances used to check pregnancy.
- These are also called birth control pills, oral contraceptives.
- These chemicals contain mixture of Estrogen and Progesterone and control the menstrual cycle and ovulation in women.
- Synthetic progesterone has more potency than naturally occurring one.
- All these drugs have side effects.
- Ex: Norethindione-a ketone. It is a synthetic progesterone whereas
- Novestrol- a enol is a combination of estrogen and progesterone
- (Structures on pg.no.448 of NCERT textbook-2)



Acknowledgement
The reference books used are:
XII NCERT textbook-II
XII New Course Chemistry part –II
Pradeep publication