# DIFF. B/W MR, ER, IR, XR, DR ETC. FORMULATIONS

## ★. IMMEDIATE RELEASE (IR)

E.g: • TOREX-IR • MODACT-IR
• VOLTAFLAIX (IR)

→ Designed to dissolved without delaying
→ ON swallowing they disintegrate immediately to make drug avail. for absorption
→ used when rapid ONSET of action is advantageous
→ CONTAINS SUPER-DISINTEGRANTS e.g cross-carmellose
→ In general 70-80% of drug should be released preferably ē in an hr and certainly ē in 4 hrs after ingestion.

## MODIFIED-RELEASE FORM.

### • DELAYED (DR)

- Release of the drug may be time dependent or may depends upon environment e.g pH
- Upon reaching the desired time or condition the drug is released promply or completely.

Examples:-
- enteric coated Tablets
- Delanzo DR capsules
- Omega (omeprazole) DR capsules
- Xyquel DR (Doxylamine + pyridoxine).

### EXTENDED

ER
XR
XL

- Sustained release (SR)
- Sustained action (SA)
- prolonged action (PA)
- controlled release (CR)
- Time release (TR)
- long-acting (LA)

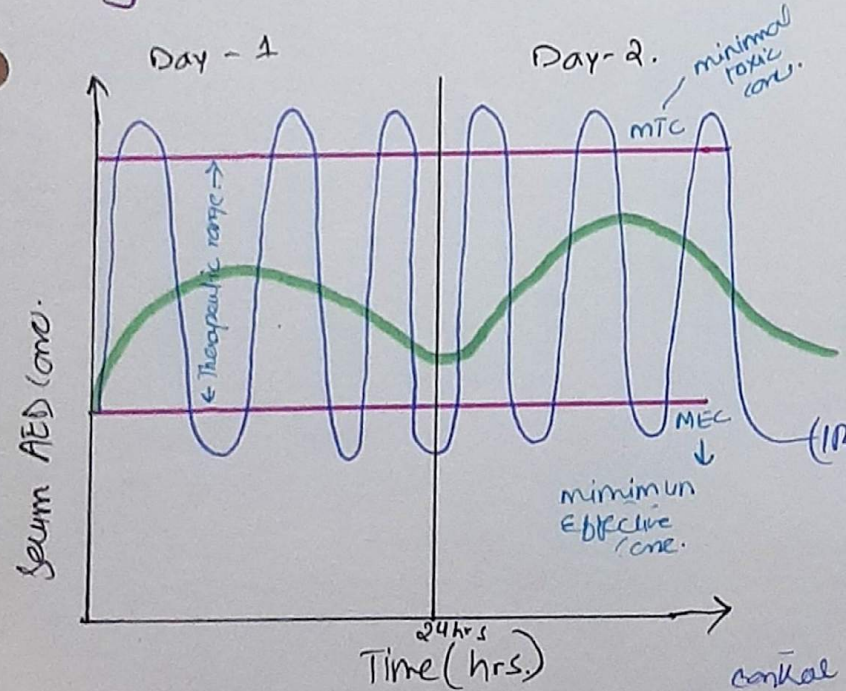
★- These terms are often used interchangeably but the individual product may differ in design & performance cont.....

USP Defines ER as:

" a dosage form designed to release Medication in a controlled manner during an extended period of time, at a predetermined rate, duration and location following administration

- At steady state rate of absorption ≈ rate of elimination due to metabolism & excretion.


- IR release drug immediately serum drug conc. (SDC) rises & quickly peaks before falling off)
- For DR-formulation, the SDC profile is similar to IR-formulation but there is a lag phase following ingestion before the drug is released
- For ER, SDC rises more slowly from the time of ingestion forming a much broader conc. over the time




- OD-dosing
- maintain SDC ē in therapeutic zone (Tz)
- Minimizing peak to trough fluctuation thus less likelihood of toxicity or seizure.
- However, if the dose is missed the likelihood of seizure is more greater than IR drug
- Expensive.

ER

(IR) →

- Frequent dosing eg in this case BDS tid is required
- For some patients, seizure control ē IR may require drug dose that result in Peak conc. above therapeutic range that shortly after admini = likelihood of toxicity
- the SDC trough shortly before next IR dose & may be below T. zone = ↑ likelihood of seizure

# EXAMPLES of EXTENDED RELEASE - DRUGS.

- glucophage XR (500mg, 1000mg, 750mg)
- Sitamet XR 50/500
- Sitaglumet XR 50/500
- Xenglumet XR 10/1000
- Nifedic XL 30mg Tablets
- Xatral LP 10mg Prolong Release.
- Adalat LA 30mg Tab.
- Airtal ER - tablets 200mg.
- Ranogin ER (Randazine) 500mg
- Epiral CR tablet
- Keppra XR (levetiracetam)
- Klevra XR
- Tonoplex - SR - tablet
- Tramal SR Tablet.