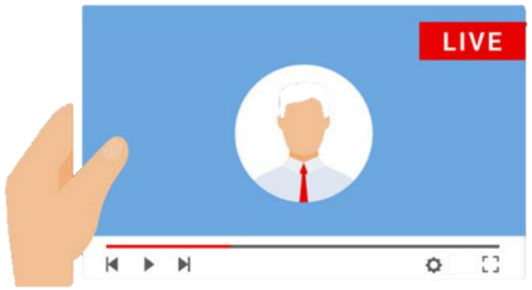

Welcome to "Live online class"

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Tablets 2

Agenda

Today's Topic: **Tablets – 2**

- Recap
- Tablet formation machine: theory and operations
- Methods of tableting
- Types of tablets

Solve **5-6 GPAT Questions**

Recap

Introduction

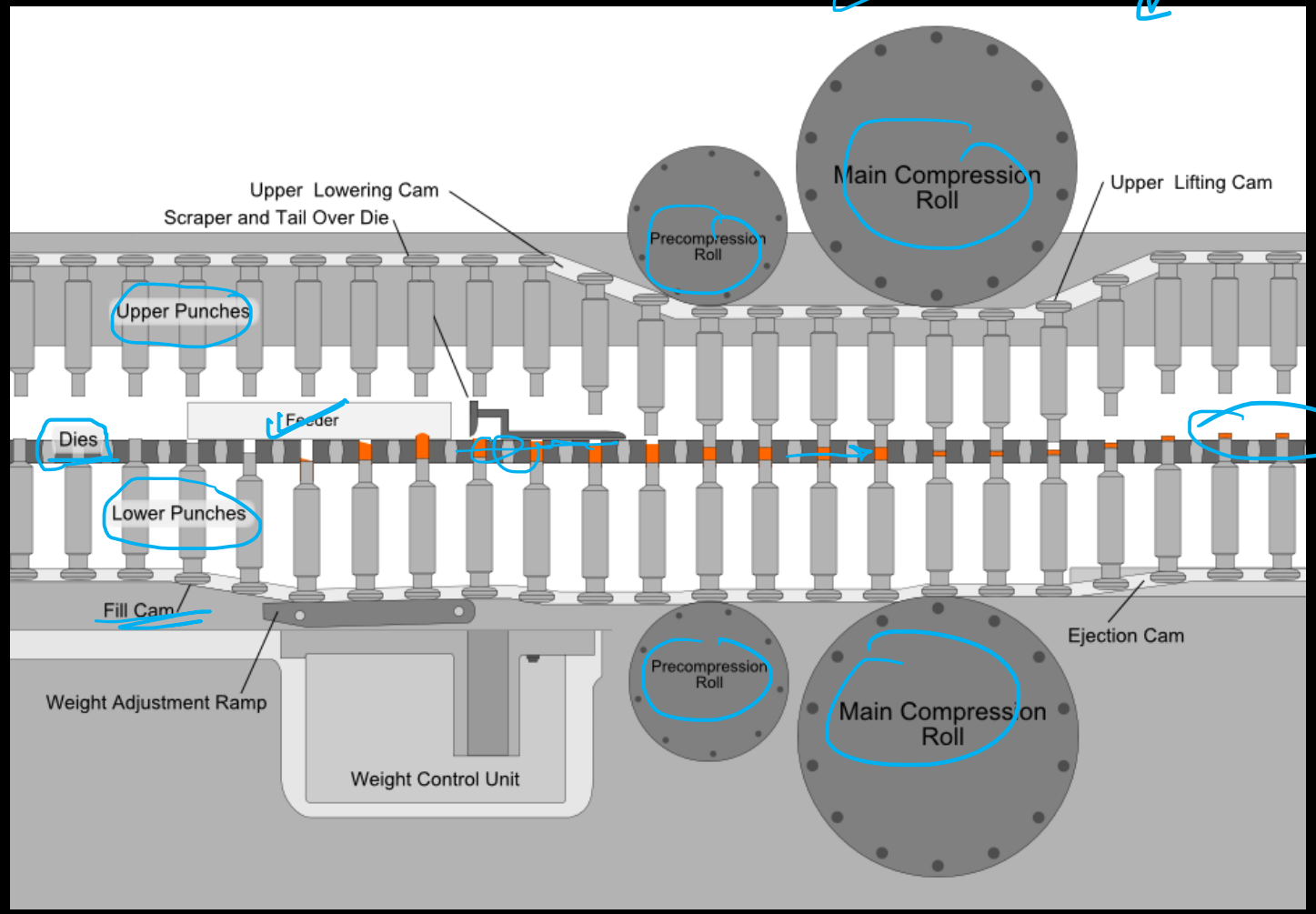
Advantages and disadvantages

Formulation of Tablets: Excipients

- Diluents/fillers/bulking agents
- Binders & adhesives (granulators)
- Disintegrants
- Lubricants, Antiadherent & Glidant
- Colors, flavors and sweeteners

6-7 GPAT Questions

Tablet formation machine: theory and operations



parts of machine

Tablet formation machine: theory and operations

Compactions

→ compression

→ Consolidation

Compression

(1) particle rearrangement → volume ↓

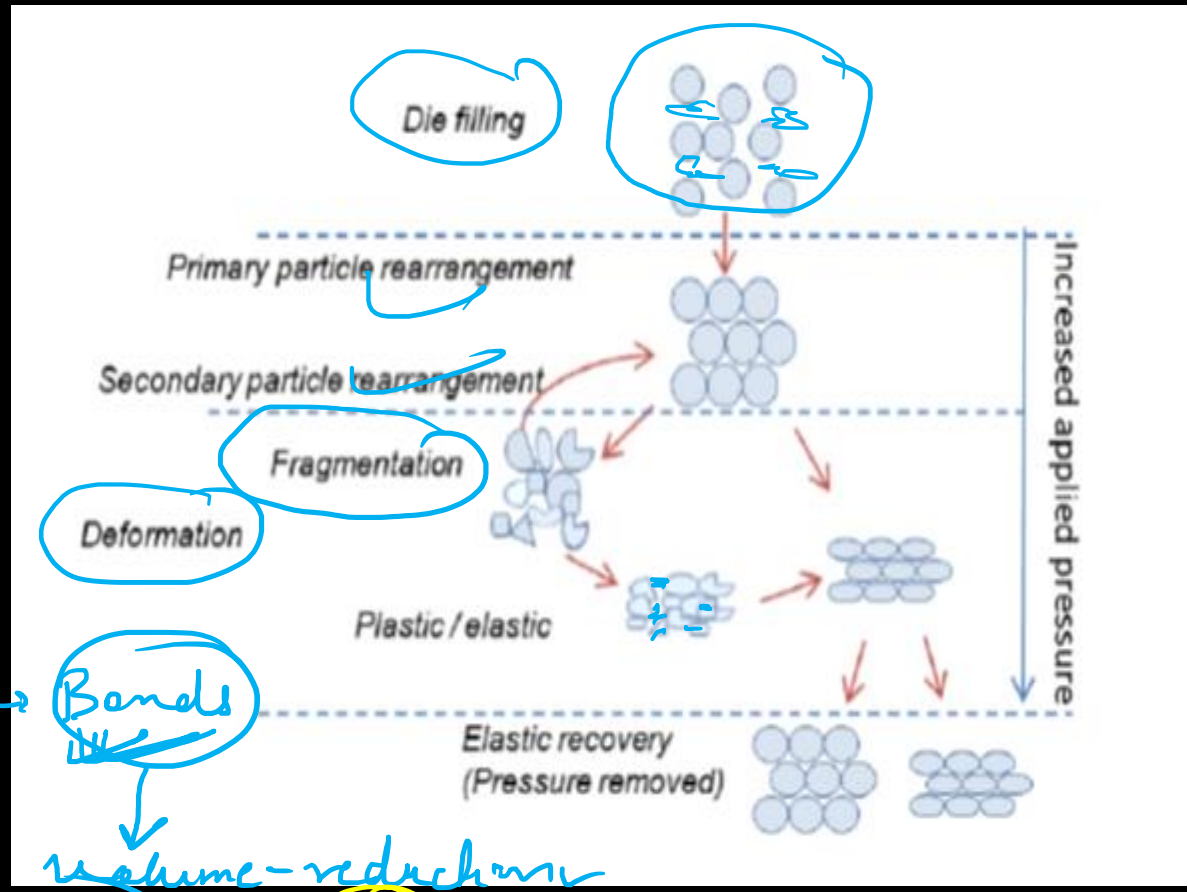
(2) ↑ compression force → Deformation

Particle Frag

(3) Particle - Particle interact (Bonds) → mechanical strength

retain

Consolidation



Bonds → volume reduction

Eq

→ Kawakita Equation

→ Heckel Equation

→ Walker Equation

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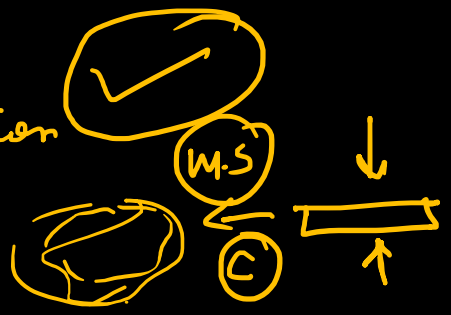
Tablet formation machine: theory and operations

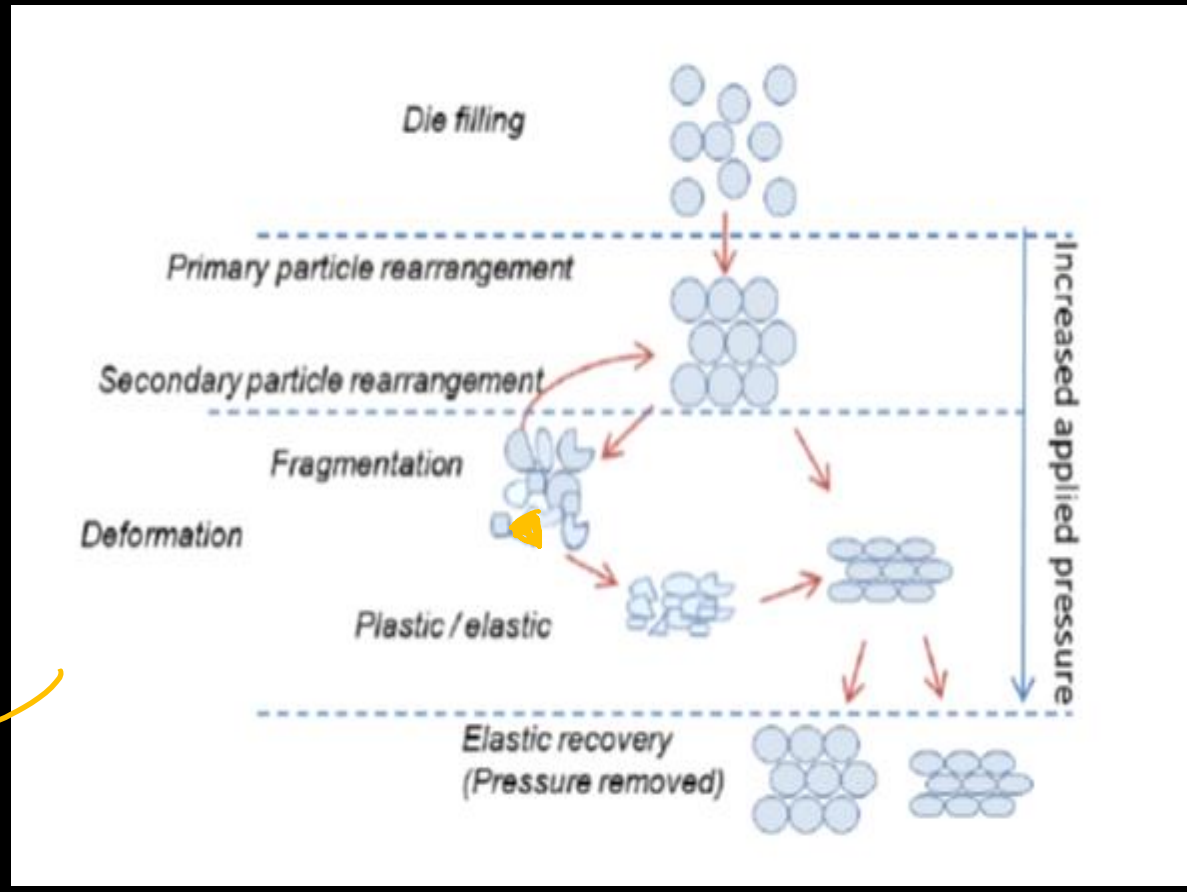
Particle deformation

1. Elastic deformation
   - Reversible
   - M.S
   - C



2. Plastic deformations
   - Irreversible → permanent changes

3. Brittle fracture → small size



Powder → Compress → Consolidated → Tablet

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Tablet formation machine: theory and operations

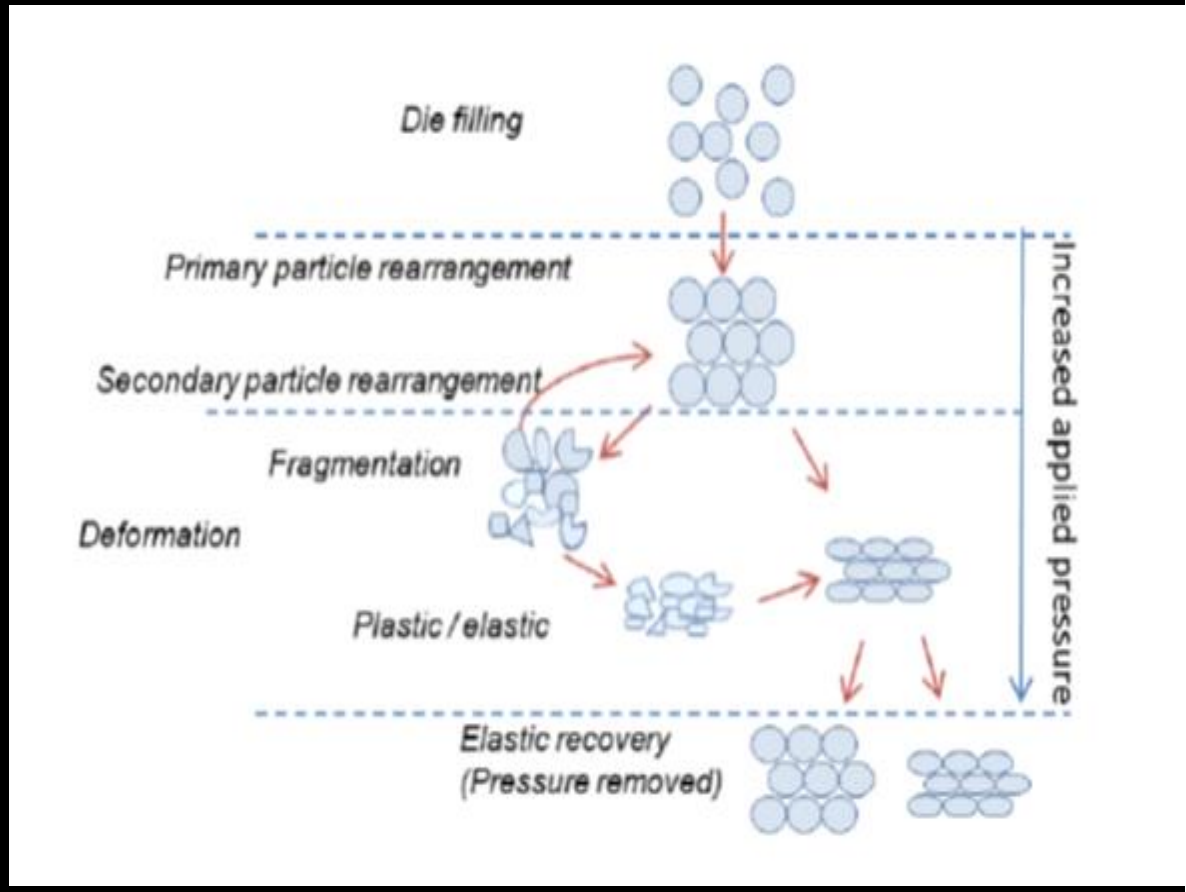
Decompression

→ Compaction ⟶ force
(compression + consi)

Ejection

Die ⟶ push ⟶ eject

Scrape off



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Tablet formation machine: theory and operations

Hopper → hold feed

feeding mechanism → hopper → die

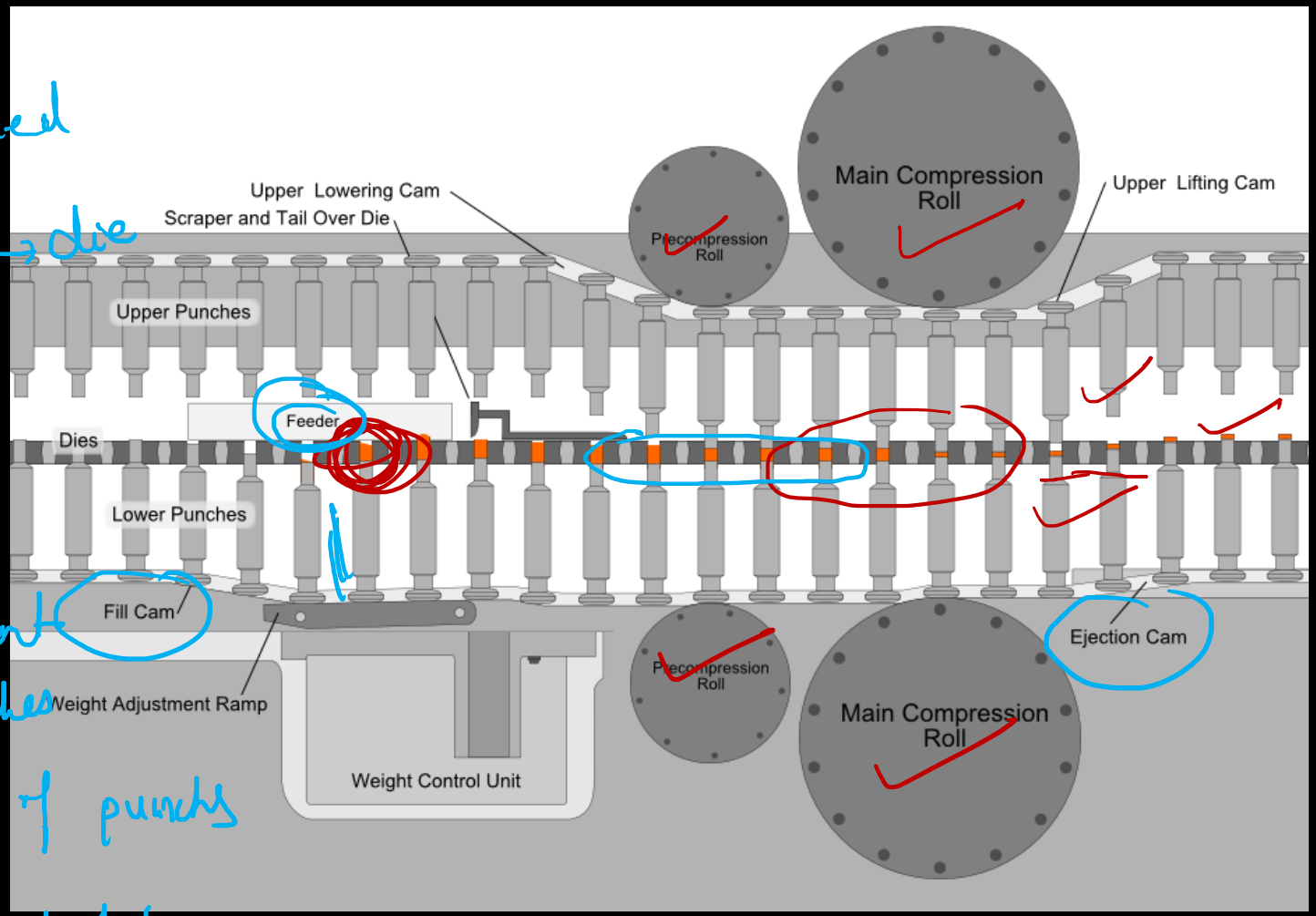
Die → shape / size

Punches → compress

Cam tracks → movement of punches

Turrets → holding of punch

Die table → holding of die



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Tablet formation machine: theory and operations

Tooling

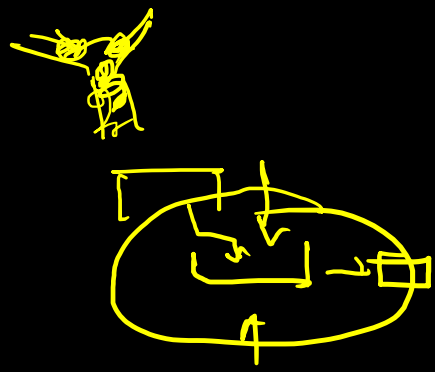
B

D

BB

DB

Punch diam (mm)	Die diam (mm)
19	30.15
25.4	38.1
→ 19	24
25.4	30.15



Additional → Gravity feed frame | force feeder

efficiency tablet ↑ Granulation level sensor

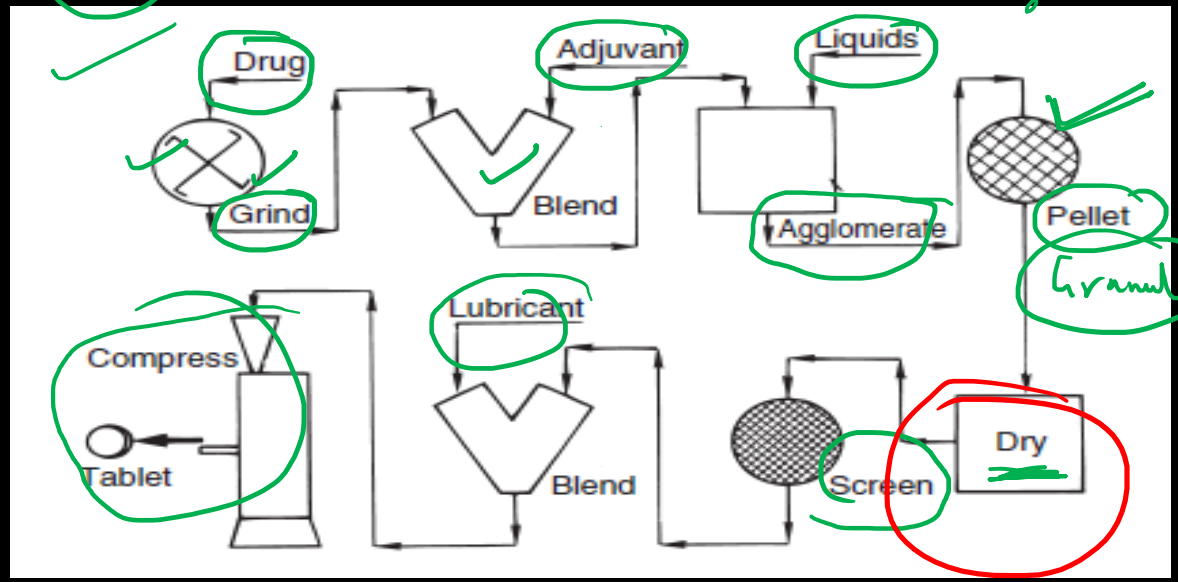
tablet deduster

fette machines → (tablet temp.) cold

METHODS OF TABLETING (1) - WET GRANULATION

most commonly used

water ✓ organic



Advantages

→ Reduced segr. of formulation processing → Batch variability ✓

→ Low conc^n agent (potent drugs)

→ Excipients → conventional

→ hard tablets → post-processing → coating

→ size red^n
→ size sep
→ mixing
→ drying

Disadvantages → several process → complicated

→ Solvents → no. of problems

water → hydrolysis ✓ → Sol^n → organic

→ Heat → thermolabile ✓ → cost → V.O ✓ Energy ✓

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METHODS OF TABLETING (1) – DRY GRANULATION

Solvent – ✗

Slugging

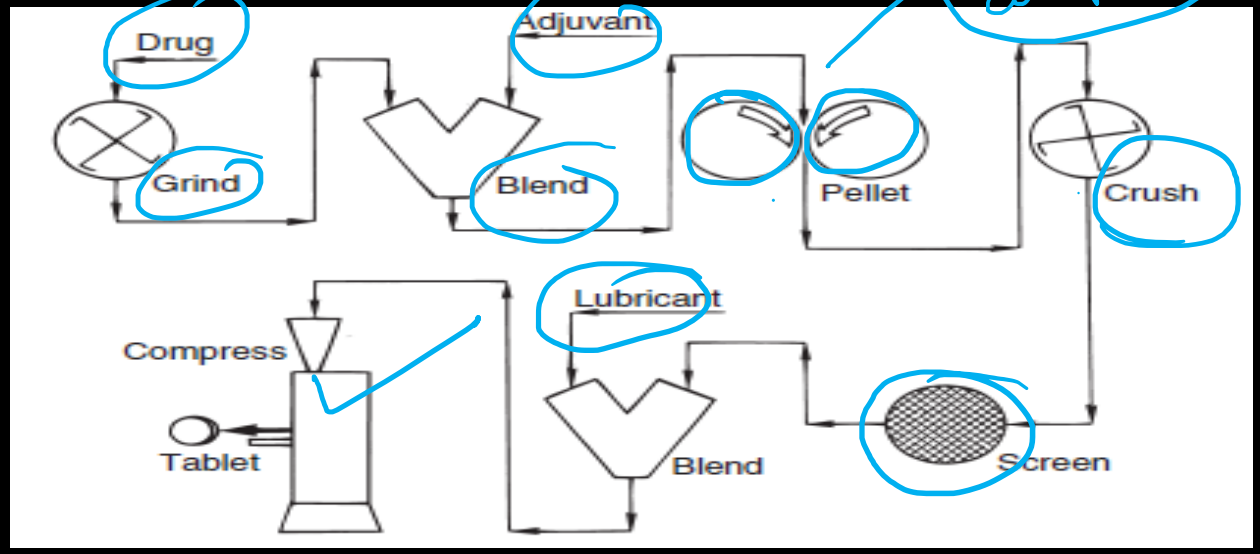
→ oversize tablets

↓

→ Size reduction

↓

→ Compaction ✓



Roll ≥ compaction

→ sheet / film of compressed material

↓

Size reduction

↓

Compaction → tablet

1. Slugging
2. Roller compactor

UO

→ mixing

→ Size red ↓

→ Sieving

✗ Drying ✓

METHODS OF TABLETING (1) – DRY GRANULATION

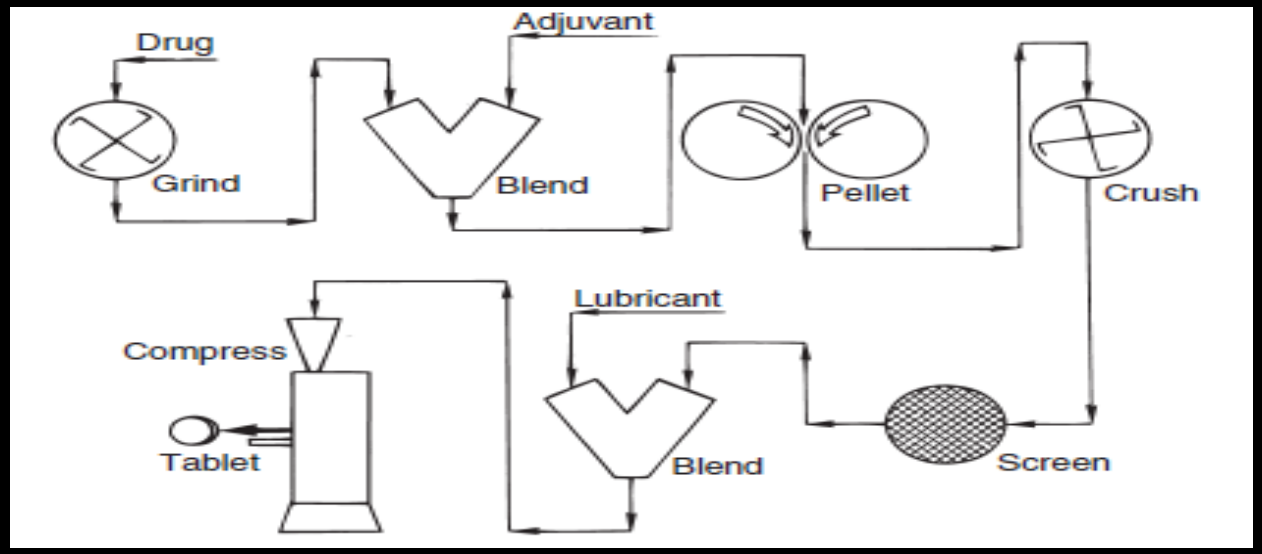
Advantages

→ Conventional excipients

→ Solvent → drug morphology

→ heat ✗ → thermo ✓

Solvent ✗ → water ✗



Disadvantages → special machine

→ segregation batch → batch uniformity ✗

→ soft tablet → post-tablet → tablet coating

→ Dry → powder → contamination

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METHODS OF TABLETING (1) - DIRECT COMPRESSION

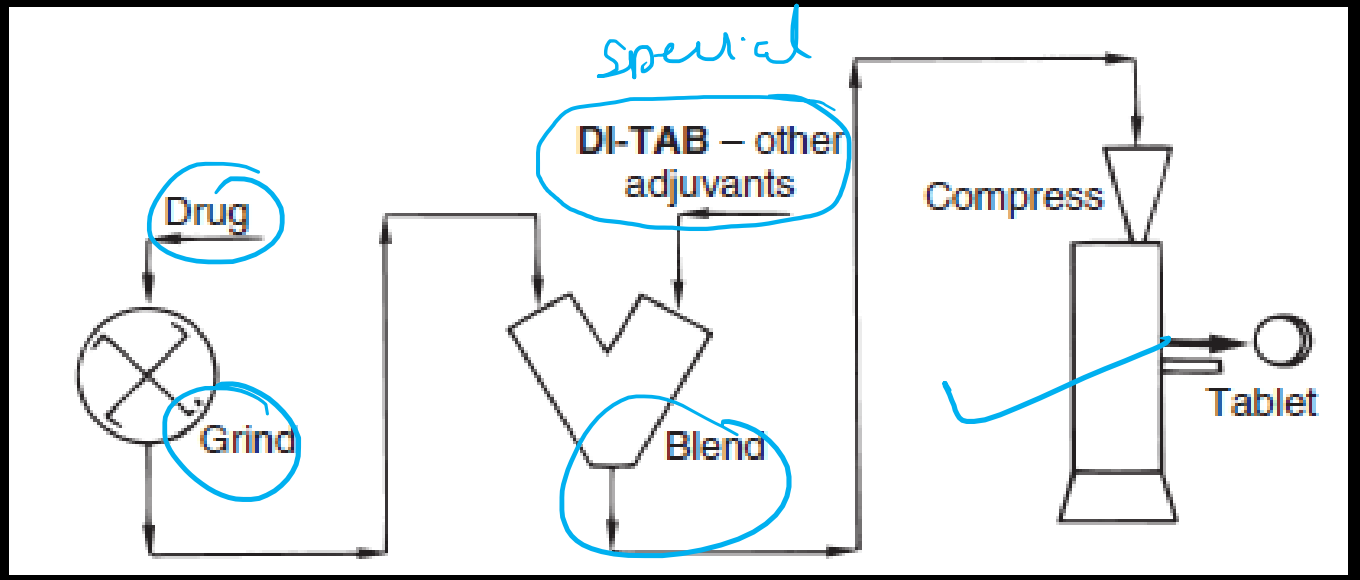
Advantage

→ simple + easy + few steps

→ water / solvent ✓

→ heating → thermolabile ✓

→ wear / tear → punches / dies ↓



Disadvantages

→ stratification → uniformity of drug → poor

→ Direct → physical incompatibility (Millard's reach)

→ Static charge ↓ → special excipients ✓

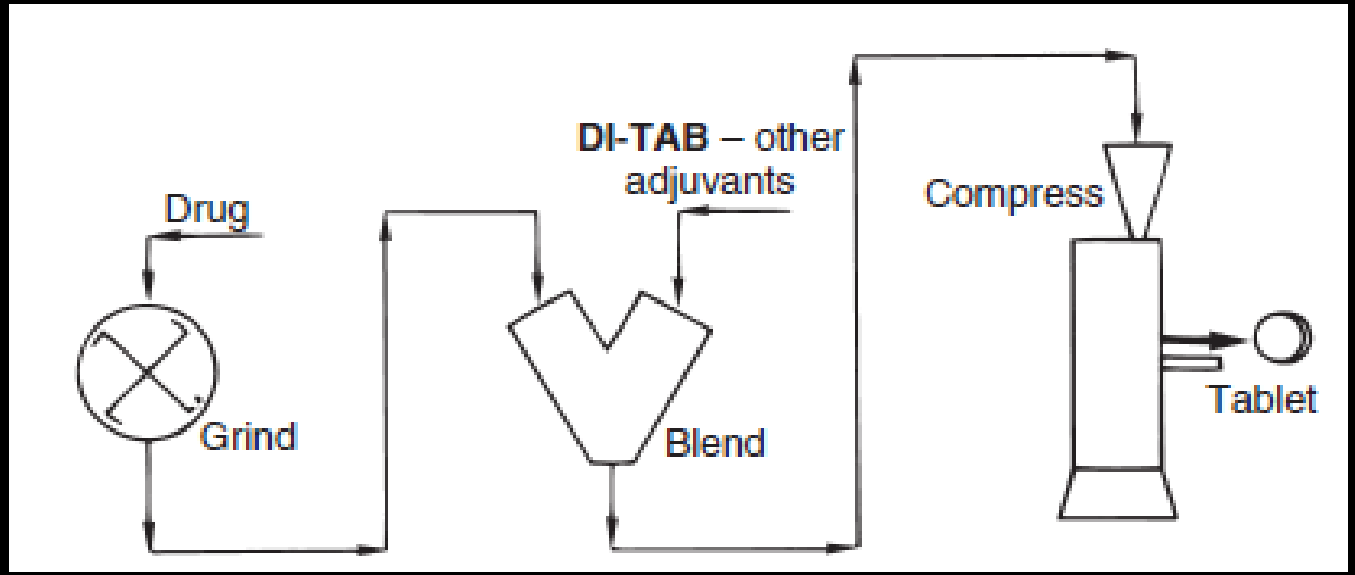
METHODS OF TABLETING (1) - DIRECT COMPRESSION

fillers → spray dried lactose
MCC
Dicalcium phosphate

disintegration → super di

lubricants → talc
Mg stearate

glidant → silicon dioxide (fumed)

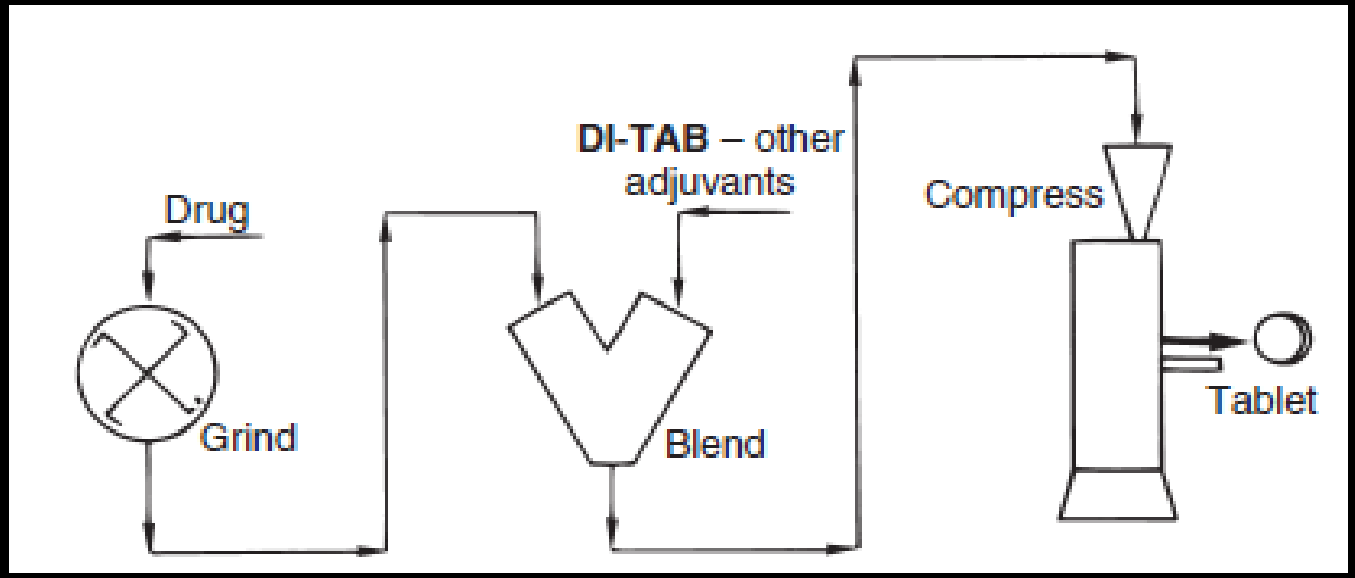


METHODS OF TABLETING (I) - DIRECT COMPRESSION

Co-excipients

A + B → physical ✗

Chemical ✗



☆

Pharmatose DCL 40 → Anhydrous lactose + anhydrous Lactitol

Cel-O-Cal → Calcium sulphate + MCC

Cellactose → Lactose + Cellulose

StarLac → Lactose + starch

Ludipress → Lactose + Povidone

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Types of tablets

tablets used to Shallow

- Standard coated
- multiple compressed
- sugar coated tab
- Enteric coated tabl
- film coated
- Chewable tablets

tablet use oral Cavicity

- Buccal tablets
- Sublingual tablets
- troches
- Lozenges
- Dental cones

Other route tablets

- Implantation tablet
- Vaginal tablets

Solution form tablet

- Efferescent tablets
- Dispensing tablet
- hydrolong
- titrates

Types of tablets

Standard Coated tablet (wet gran | dry gran | direct comp)

→ rapid disint + release drug

→ GIT action → systemic effect

○ → disintegration → dissolution → absorption → distribu

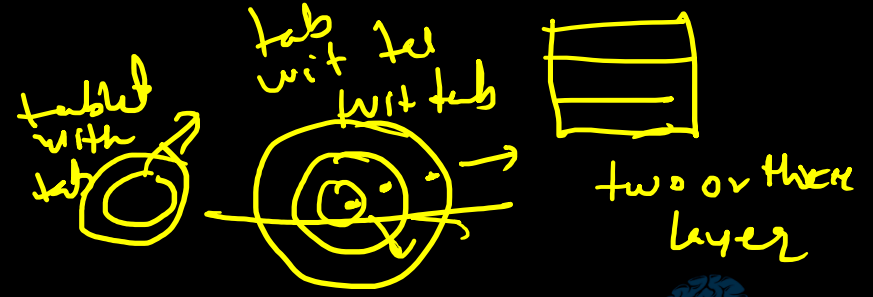
(small fragments)

↑ surface area

PS ↓ → SA ↑

PS ↑ → SA ↓

multiple compressed tablets (layers) →



Why(?) → physically | chemically comp ⊗

→ prolonged | repeat

Limit → Unpredictable

Control ⊗

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Types of tablets

Enteric coated drug

Stomach (x) → Intestine ✓

1. GIT (↓) pH → degrade ✓
2. Site of action → Intestine

Sugar coated

→ mask unpleasant (x)

→ bulky ✓

film coated

→ thin layer → fit

bulky (x)

→ mechanical strength

Types of tablets

Chewable tablets

- Chew → should not ✗
  - easily to children, elderly, difficulty in swallowing ✓
- Bitter chewy / foul smelling ✗
- Antacids ✓

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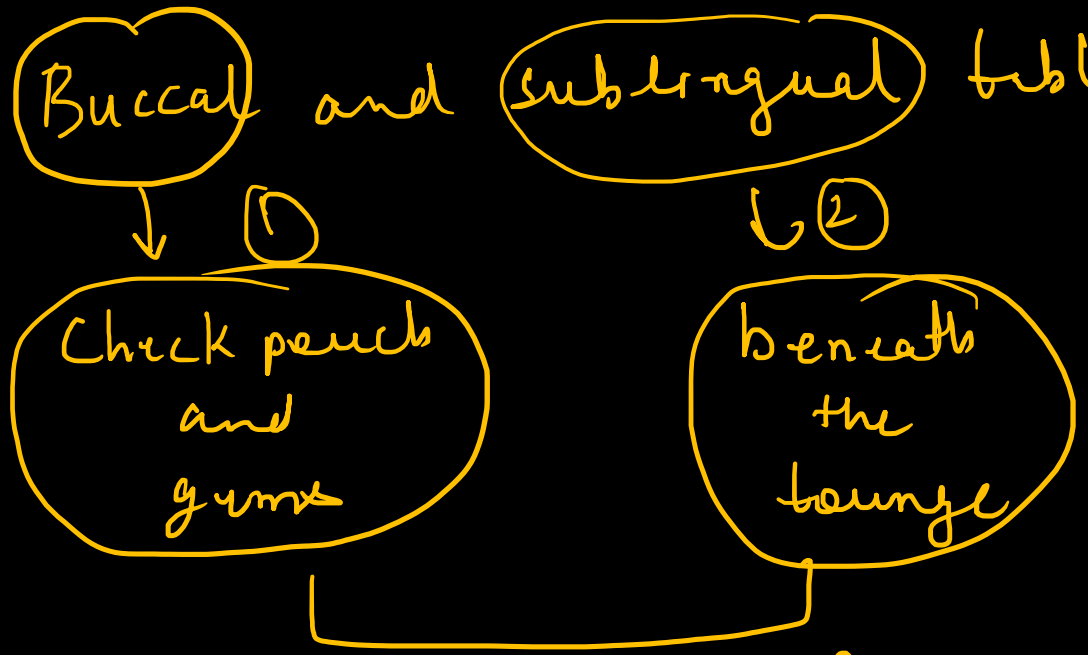
Types of tablets



→ first-pass metabolism (X)

→ GIT (pH) → decompose (X)

→ oral cavity → onset of action → Rapid ✓

Disintegrate (X) → 10-15 min dissolve ✓

Types of tablets

Troches and lozenges → pastilles → cough drops

↳ exert local effect in mouth ✓
↳ sore throat | coughing ✓
↳ local anesthetics

Dissolve (1)
Dissolute (2)

- Lozenges → fusion ✓
  Candy molding method ✓
- troches → compression

Dental cones → empty Socket ✓
↳ Antibacterial | anticoagulation ✓

Types of tablets

Implantation tablet (depot tablet)

→ Subcutaneous ✓ → [one month → year]

① Surgical tech. → Implant → Remove

DES

[Kern injector]

② Tissue toxicity

→ Hormone therapy → animals ✓ (ear)

Vaginal tablets ✓

ovoid or pear shaped ✓] → anti bacterial, antiseptic, steroids]

① Plastic inserter ✓

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Types of tablets

Effervescent tablets

tablet + water → effervescence ✓

└ Acid + base → bitter ✓

Problem → moisture ✗

Dispensing tablets

Usually in-house ✓

potent → dose → toxic

→ tablet triturates (old) → hand-operated

potent + diluent

Hypodermic tablet

→ water solubles

→ sterile water

water for injection

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GPAT QUESTION

Which of the following component guides the movement of the punches?

A. Turrets

B. Cam tracks

C. Hopper

D. Fette

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GPAT QUESTION

Which of the following process includes formation of large tablets as intermediate steps?

A. Roller compaction

B. Slugging

C. Wet granulation

D. All of above

Dry-granulat

GPAT QUESTION

____ tablets held in cheek pouch while _____ tablets are placed beneath tongue.

A. Buccal tablets and sublingual tablets

B. Sublingual tablets and buccal tablets

C. Depot tablets and buccal tablets

D. Depot tablets and sublingual tablets

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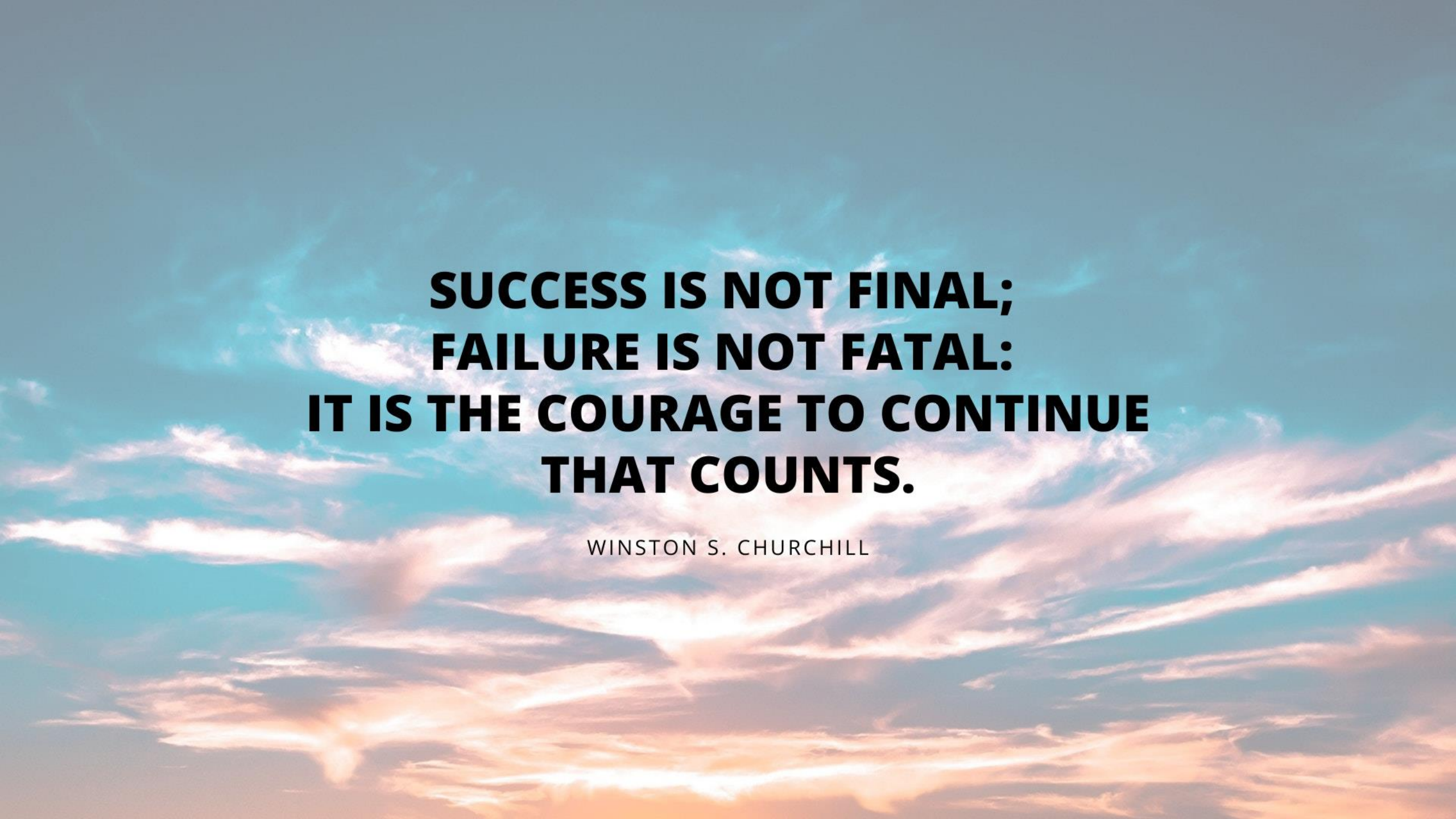
SUCCESS IS NOT FINAL;
FAILURE IS NOT FATAL:
IT IS THE COURAGE TO CONTINUE
THAT COUNTS.
WINSTON S. CHURCHILL