Sugar coating

تُعد طريقه تقليديه قديمه

- Sugar coating is the traditional method of coating tablets
- It involves successive application of sucrose based solutions to tablet cores. تحتوي على السكروز ومواد إضافيه أخرى
- It is less common nowadays than film coating
- It takes time from hours to few days.
- The increase in tablet weight is 30-50 %
- In general the equipments used in film coating can, with suitable modification, be used for sugar-coating techniques.
- Methods of applying the coating syrup include manually using a ladle or by spraying.

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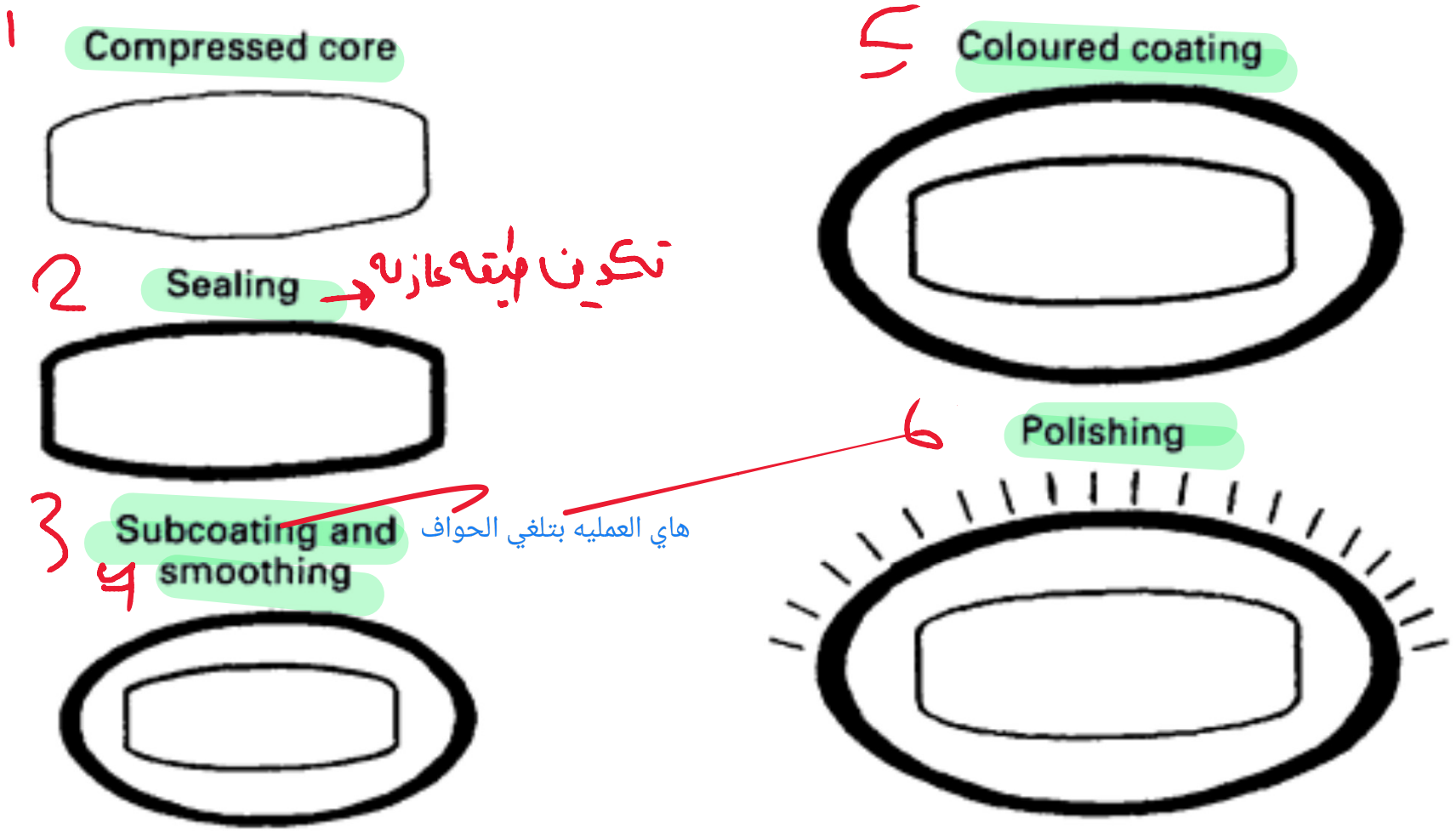
طرق تطبيق ال sugar Coating

Sugar coated tablets

Film coated tablets



The stages in sugar coating

Sugar coating

1. Sealing of the tablet core

أي شي بدي ياه يعزل الرطوبه
بسميه sealing

- A seal coat is applied to prevent moisture penetration into the tablet core (especially needed in pan-ladling processes).

- In spray processes, it is possible to adjust the application of the subcoats and coat so that localized overwetting does not occur and therefore no need for sealing.

بعملية الspraying لا نحتاج
لخطوة ال sealing

Sugar coating

المواد المستخدمه بال sealing

Examples of materials used in sealing:

- Shellac

هي مادة تستخرج من الحشرات

  - This is a purified resinous secretion of the insect *Laccifer lacca.*
  - It suffers from occasional supply problems and quality variation.
  - there are also stability problems associated with increased disintegration and dissolution times on storage.للحبوب disintegration time إنه مع الوقت بزيد ال stability بتعاني من مشكله ال

- Zein (extracted from corn gluten meal)
- cellulose acetate phthalate
- polyvinyl acetate phthalate

Sugar coating

#في هذه العمليه بنستخدم ال sugar syrup

2. Subcoating

- The subcoating is applied to round the edges and build up the tablet size
- The process is usually performed by applying sticky solution of sugar, gelatin or acacia to the tablet and then adding (dusting) the subcoating powder (bulking agent) such as calcium carbonate or talc to the tablets and then drying
- Subsequent subcoats are applied in the same manner until the tablet edges have been covered and the desired thickness is achieved
- For spray processes, a subcoating suspension containing both binder and the subcoating powder is sprayed intermittently on the tablet bed

في حاله ال spray بضيف ال subcoating powder إلى syrup

بنهاية مرحله ال subcoating
فإن كل ال edges بتكون
راحت

Sugar coating

3. Smoothing

هلأ بدنا نعمل السطح ناعم

- Tablets will have a rough surface after subcoating.

- The purpose of this step is to remove the imperfections in the tablet surface (rough surface) caused by subcoating process.

- In this step, few sugar syrup coats are applied (the first usually contains some suspended particles and called grossing syrup).

Sugar coating

4. Coloring عباره عن sugar syrup مضاف إله لون

- In general colors should be added when the tablets become quite smooth.

- Syrup solutions containing the dye are applied until the final size and color are achieved.

بالعاده الطبقه الأخيره المضافه بتكون clear وتُعد طبقه حمايه للون

- In the final syruping or finishing step, a few clear coats of syrup may be applied.

Sugar coating

5. Polishing

المواد اللي بنستخدمها للتلميع هي مواد شمعيه

- Tablets are moved to the polishing pan and solutions of beeswax or carnauba wax in suitable volatile solvent are applied until the tablets become shiny.

طبعاً هدوله ما بذوبو بالمي وبالتالي بنذوبهم في volatile
وإلهم كمان أدوات خاصه للرش ، solvent

Sugar coating

6. Printing

- It is a common practice to identify all oral solid dosage forms with a manufacturers logo, product name, dosage strength or other appropriate code.

- For sugar coating such identification can be done only by printing using special edible inks.

في كثير من الشركات بتكون بدها تميز الدوا تبعها حتى تمنع الغش وتساعد المريض
إنه يميز الدوا ؛ لذلك بطبعوا ع الحبه بستخدام حبر **edible** " قابل للأكل"

Cracking = تشققات
Chipping = التهّشم
splitting = انفصال ال coat عن ال core

Sugar coating problems

Cracking, chipping and splitting of coat

- Sugar coatings are inherently brittle.
- Tablet cores that expand cause cracking.
- Expansion may result from:
  - Moisture sorption
  - Stress relaxation of the core
- Addition of small quantity of polymer often helps to improve structure integrity.

تفسير ليه إحنا بنضيف الجيلاتين !!!

Sugar coating problems

Twinning التوأمه

- Results from drying after sticking of tablets.

Non drying coating

- This a result of sugar inversion.

تحوّل ال sucrose. إلى glucose and fructose وهذه التحولات بتخليه sticky mass
وغير قابل للتجفيف

Sugar coating problems

Uneven color

Causes:

- Poor distribution of coating liquids.
- Color migration of water soluble dyes while the coating is dried.
- Unevenness of the surface of the subcoat.
- Excessive drying between color application can cause erosion of the color layer

➢ ***Marbling*** may result from rough surface after smoothing so that the thichkness of polish layer varies

بتكون سماكه ال **coat** كبيره

لما ما أعمل **smoothing** فإن
عند إضافه اللون رح يصير في
سماكات مختلفه

لو نشفت زياده عن اللزوم بتصير طبقات الحبوب
تحتك مع بعضها البعض وبروح جزء من اللون

هي حاله خاصه من ال **uneven color** بحيث إنها ما بتكون لون
موّحد والسبب إنه مو عامل **smoothing** بشكل كافي وبعدها ضفت
ال **polishing** و ال **polish** صار بسماكات مختلفه

Sugar coating problems

Blooming and sweating

تنتج عن بقايا رطوبه موجوده بال tablet

- This result from residual moisture.
- This mositure can diffuse out and affect the product quality.
- Moderate levels of moisture egress causes the polish to take on a fogged appearance (**Blooming**).
- Higher levels of moisture egress the moisture may appear like beads of perspiration (**Sweating**) which may cause tablets stored in closed containers to stick.

ممكن يخلي sweating
يلتصقو ببعض tabletال

press coating ممكن تكون
طريقه لاتجكم بال drug
release

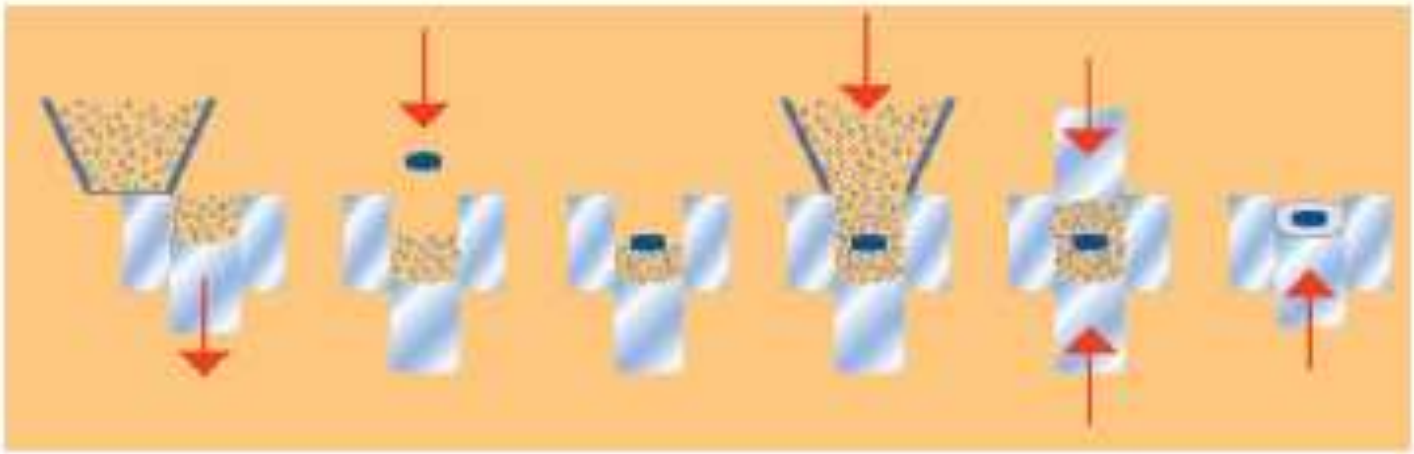
Press coating

- The technology of press coating differs from the film and sugar coating techniques.

lower &upper punch الكبس بشتركو فيه

- Press coating involves the compaction of granular material around already performed core using compressing equipment (specialized tableting machine) similar to that used for the core itself.

الفكره هون إنه lower punch بنزل لأكتر من مستوى و
ال hopper بنزل ال tablet حبه ورا حبه



I: Prefilling the half amounts of outer coating materials into the die.

II: Putting the inner core tablet on the powder bed of outer coating materials.

III. Centering.

IV: Filling the residual half amounts of outer coating materials.

V. Compression

VI. Ejection of press-coated tablet from the die.

Press coating

- Press coating is used mainly to separate chemically incompatible drugs.
- Two steps of press coating can be used for perfect separation between two ingredients by an inert middle layer.
- There has been increased use of compression coatings for the purpose of modified release products (e.g. Adalat® CC).
- The disadvantages of the process arise from the complexities of the mechanism used in the compressing machine.

من سلبياتها إنه بتواجه
تعقيدات كتيره ومثال عليها إنه
كيف بنحط الحبه بال **center**

Standards for coated tablets

- In general pharmacopeias have similar requirements for coated and uncoated tablets, the difference being that:
  - Film coated tablets must comply with the uniformity of mass test unless otherwise justified and authorized.
  - Disintegration test
    - Immediate release tablets
      - Film coated: 30 min (except for enteric)
      - Other types of coating: 60 min
      - The test may be repeated using 0.1 N HCl in the event that any tablets fail to disintegrate in the presence of water.
    - Enteric coated tablets
      - A challenge test in acidic medium (e.g. 0.1 N HCl for 1.5 - 2 hours) is done, where no disintegration should occur. Then the tablets are transferred to buffered medium where disintegration should occur within 45-60 min