SNS COLLEGE OF PHARMACY AND HEALTH SCIENCES COIMBATORE

CASE STUDY BASED PUZZLE

BP502T: INDUSTRIAL PHARMACY I

TOPIC: HARD GELATIN CAPSULE

Case Study 1: Capsule Shell Failure

A pharmaceutical company observed that hard gelatin capsules stored during the monsoon season became brittle and cracked during filling and transport

Questions

1. What property of gelatin is responsible for this problem?
2. Which environmental factor mainly affects hard gelatin capsule shells?
3. What corrective measures should be taken during storage and production?
4. Which excipient can be adjusted in capsule shell formulation to overcome this issue?

Case Study 2: Weight Variation During Capsule Filling

During in-process quality control, it was observed that capsule fill weights varied beyond pharmacopoeia limits.

Questions

1. Identify possible causes related to powder properties.
2. Which capsule filling method is most sensitive to poor flow?
3. Name at least three formulation strategies to improve flow.
4. Which in-process test would detect this issue early?

Case Study 3: Capsule Locking Problem

Capsules were found to open during packaging and transportation.

Questions

1. What is capsule locking, and why is it important?
2. Name the capsule design features that prevent opening.
3. Which manufacturing step might have caused improper locking?
4. How can this defect be corrected during production?

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Case Study 4: Slow Drug Release from Capsules

A drug filled in hard gelatin capsules showed delayed dissolution compared to the reference product.

Questions

1. Identify formulation-related causes for delayed dissolution.
2. How does capsule shell thickness influence drug release?
3. What special formulation techniques can be used to modify release?
4. Which final product quality control test confirms this issue?

Case Study 5: Capsule Defects

During visual inspection, the following defects were noticed:

- Split capsules
- Telescoping
- Pinholes

Questions

1. Match each defect with its possible cause.
2. Which defect is related to improper drying?
3. Which defect occurs due to incorrect cap–body dimensions?
4. How are these defects minimized during production?