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Herbal Lipstick Formulation and Evaluation

Practical 14 - Bench formulation practical

Aim

To prepare and evaluate a lipstick base using a controlled laboratory formula.

Principle

A lipstick base combines waxes and oils into a structured stick. Wax composition, pigment wetting where relevant, cooling and mould filling affect strength, surface uniformity and payoff.

A formulation comparison is meaningful when the raw-material grades, batch size and evaluation conditions are recorded. Change one planned factor at a time or use a documented experimental design, and compare independently prepared batches rather than only repeated readings from one batch.

Materials and Requirements

- Approved wax and oil blend with a permitted teaching pigment if used
- Controlled heating bath and moulds
- Selected strength, appearance and uniformity methods
- Suitable mixing, temperature and measurement equipment
- Calibrated balance, suitable containers and identified evaluation equipment
- Controlled batch sheet and raw-data forms

Procedure

1. Define the purpose, formula, batch size, material grades and comparison conditions. Calculate all quantities before weighing.
2. Check equipment readiness and record material identities and actual quantities. Reconcile theoretical and actual batch mass.
3. Calculate the wax and oil fractions and prepare a uniformly wetted pigment dispersion where the exercise includes pigment.
4. Melt and combine through the selected controlled process, staying within ingredient-specific handling conditions.
5. Fill the prepared moulds, cool by the prescribed method and examine the conditioned sticks for cracks, graininess and sweating.
6. Evaluate the stated quality attributes on representative portions using the same method for all comparison batches. Record individual readings and any excluded observations with reasons.
7. Calculate the specified response, variability and material balance. Compare with predefined teaching or product criteria and discuss sources of variation.
8. Label retained preparations and dispose of remaining material through the laboratory procedure. Keep the complete preparation and evaluation record together.

Observations and Record

Enter actual measurements or the supplied teaching data. Record the method, material identity, conditions and units.

Attribute or stage	Method / conditions	Individual readings	Calculation / comment
Mass and dimensions	Record the adopted method	Record	Evaluate
Appearance and homogeneity	Record the adopted method	Record	Evaluate

Attribute or stage	Method / conditions	Individual readings	Calculation / comment
Mechanical or softening response	Record the adopted method	Record	Evaluate
Payoff by the defined method	Record the adopted method	Record	Evaluate

Calculations

• Component mass = total target batch mass x percentage / 100
• Batch recovery (%) = recovered mass / theoretical batch mass x 100

Worked Example

Illustrative 50 g base: wax fraction 20% gives 10.0 g and oil fraction 80% gives 40.0 g before any separately specified pigment or additive.

If 2% pigment is introduced, the total formula is revised rather than adding it without correcting the other fractions.

Result and Interpretation

• Interpret strength and application-related physical tests with the selected composition and conditioning method. Record appearance, homogeneity, relevant physical measurements and the defined observation period.
• State the preparation conditions and the evidence supporting the result. A satisfactory physical observation alone does not establish long-term stability, clinical performance or suitability for administration.

Precautions

• Prepare only the authorised teaching batch and identify it for laboratory evaluation.
• Follow ingredient-specific handling and disposal requirements.
• Record the need for a validated preservation system before any stored or distributed product is considered.
• Use the laboratory-approved formulation and equipment procedure. Teaching batches are identified for laboratory evaluation.

Viva Questions and Answers

Why calculate all quantities first?

It identifies inconsistencies in the formula and establishes the material balance.

Why use a controlled method?

Mixing, temperature and ingredient order can change the resulting structure.

Does a visually acceptable batch establish stability?

No; stability and microbiological quality need appropriate evidence.

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