Development of Biocosmeceuticals

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Outline

• Definition
• Development of products
• Dosage form consideration
• Bioactive ingredients
• Challenges
Definition

Cosmetics vs cosmeceuticals
• Cosmeceuticals contains bioactive compounds and intend to treat mind skin disorders
• Cosmetics is used for cleansing, beautifying, promoting attractiveness and keeping the skin and hair healthy

Biocosmetics and biocosmeceuticals
• Cosmetics or cosmeceutical products which are based on natural ingredients
Development of cosmeceutical products

1. Defining a desired product
2. Understanding active ingredients
3. Developing a product
Defined desired products

- Product concept
- Product type or dosage form***
- Required bioactive ingredients
- Ingredients to omit and regulatory issues
Product type

- Skin care products
- Hair care products
- Make up products
Dosage form consideration

• Solid
• Solution
• Suspension
• Emulsion
• Nano-preparation: liposomes, ethosomes
Advanced lipid-based nanosystems

- Solid lipid nanoparticles
- Nanostructured lipid carrier
- Liposome
- Ethosome

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Development of cosmeceutical products

1. Defining a desired product
2. Understanding active ingredients***
3. Developing a product
Bioactive ingredients

Conventional bioactive ingredients:

• Hydroxyacid, retinoid, vit c, etc.

New bioactive ingredients:

• Lactobionic acid, protein (silk, protein from marine algae), etc.
Interesting bioactive ingredients

- Reliable mechanism
- Reliable source of information
Example: mechanism

Suppression of tyrosinase: vit C and licorice extract
Challenges to overcome

- Skin penetration of large MW bioactive compounds
- Stability of bioactive compounds
Enhancing penetration by ethosome

Modified ethosomal system enhanced skin penetration of hyaluronic acid (MW of 20-35KDa).

Fig. 1. Schematic of an ethosome modified with SPACE peptide conjugated phospholipids used for topical delivery of hyaluronic acid (HA).
Increase in stability of retinoids

• Retinoids are known to be unstable.

• Retinyl palmitate in solution:
  45% photodegradation in 1 h

• Ratinyl palmitate in SLN and liposome:
  8% and 15% photodegradation in 4 h
References