

Experiment 6

Semisolids dosage forms: Dispersed Systems Creams

Formula 1: cold cream

Formula(1)

Rx 20gm cold cream USP

Ingredients	Master formula	Scaled formula
Spermaceti (Cetyl esters wax)	125gm	2.5 gm
White wax(Bees Wax)	120gm	2.4 gm
Mineral oil	560gm	11.2 gm
Sodium borate	5gm	0.1 gm
Purified water to make	q.s. 1000gm (add 190ml)	q.s. 20gm (add 3.8 ml)

Write calculations

	white wax:	mineral oil:
spermaceti:	$125g \rightarrow 1000g$ $x \rightarrow 20g$ $x = 2.5g$	$560g \rightarrow 1000g$ $x \rightarrow 20g$ $x = 11.2g$
Sodium borate:	$5g \rightarrow 1000g$ $x \rightarrow 20g$ $x = 0.1g$	$190ml \rightarrow 1000$ $x \rightarrow 20$ $x = 3.8ml$

1- اول اشي بدنا نوزن كل اشي:

spermaceti (cetyl esters wax) : 2.5gm

Sodium borate: 0.1 gm

White wax (bees wax): 2.4 gm

D.w : 3.8 ml

Mineral oil: 13.3 ml

2- بنجيب beaker وبنحط فيه ال cetyl ester wax وبنجيب ال glass rod وبنصير نطن بالمادة لحييات صغيرة.

3- بعدين بنضيف عليهم ال white wax وبنرجع
نطحن بالمواد مع بعض عن طريق ال glass rod.

4- بنحطهم ع الغاز عشان نسخنهم تقريبا 70
وبنحركهم شوي

5- وبنتركهم ع الغاز وبنجيب beaker جديد وبنحط
فيه ال sodium borate وبنضيف عليه ال D.W
وبحركهم بال glass rod وبعدين بنحطهم ع الغاز
جنب ال beaker الاول على درجة حرارة 75

6- بحرك المواد يلي بال beaker الاول وبصير
انه زي اطحنه بظل احرك كثير وبشيك ع درجة
الحرارة بالميزان الحراري.

7- على ال beaker الاول وهو ع الغاز
وبحرك بضيف ال mineral oil ، شوي شوي
وبظل احرك مع تسخين واضيف واحرك وهيك.

8- وبظل اشيك ع درجة حرارة
المواد يلي بكل beaker.

9- بنصير نضيف شوي شوي من
مادة ال beaker الثاني على مادة
ال beaker الاول ونحرك منيح.

10- بنشيل ال mixture عن الغاز
وبنكمل تحريك

11- بنحطه ب علبة وبنقدر نستخدمه في
حال زبطنا التجربه .

Creams:

Are semi-solid or highly viscous liquid **emulsions** intended for application to the skin.

- Creams can be used as:
 - Emollients
 - Cleansers,
 - Skin protectant
 - And to deliver drugs to the skin (acting as vehicles into which the drug is incorporated) or other body sites
 - They are divided into two types:
 - (1) Oil-in-water (O/W) creams which are composed of small droplets of oil dispersed in a continuous aqueous phase e.g. **Vanishing creams**.
 - (2) Water-in-oil (W/O) creams which are composed of small droplets of water dispersed in a continuous oily phase e.g. **Cold cream**
- Oil-in-water creams: e.g. Vanishing creams.
1. More comfortable and cosmetically acceptable as they are less greasy and more easily washed off using water.
 2. Non-occlusive
- Water-in-oil creams: e.g. Cold cream
1. Drugs which are incorporated into w/o creams are hydrophobic and will be released more readily from a water-in-oil cream than an oil-in-water cream.
 2. More effective in skin cleansing
 3. Have the advantage of being more occlusive since, having oil as the external phase reduce water evaporation from the skin thus increasing its hydration. Those creams are useful in conditions involving dry skin.
 4. Increased skin hydration may raises the permeability of the skin and enhance drug penetration.

Use of Ingredients:

- (1) **Spermaceti**: Emollient, stiffening agent.
- (2) **Mineral oil**: Emollient, Oleogenous vehicle.
- (3) **Sodium borate**: part of emulsifying agent.
- (4) **White wax (Bees wax)**: part of emulsifying agent.

Cold cream: is W/O type of emulsion

- It is an oily and greasy type of creams to which both the cleansing and lubricating creams belong to.
- In cold cream the emulsifying agent is formed by reaction between the alkaline sodium borate and the free fatty acids in Bees wax.
- Why is it called cold cream?

Procedure:

1. Weight the solid ingredients.
2. If necessary, reduce the size of cetyl esters wax and the white wax in the beaker to small pieces by using glass rod.
3. Melt the cetyl esters wax and the white wax in the beaker using hot plate.
4. Add the mineral oil and continue heating the mixture until it reaches 70°C.
5. Dissolve the sodium borate in the calculated amount of purified water and warm the mixture to 75°C using hot plate.
6. Add the warm aqueous mixture to the melted oleaginous mixture. Stir rapidly and continuously until the mixture has congealed.
7. Package in a jar. Provide a professional finish.
8. Perform dilution test using drops of oil and drops of water

14%

Beyond-Use Date Assignment:

Thirtydays or intended duration of therapy, whichever is less.

4%

Labeling:

- Main Label:
- Auxiliary label:
For external use only.

Storage:

Store at room temperature.
Thirty days use
Store in appropriate size plastic with wide-mouthed jar or in proper tube.

Use of preparation:

Skin Moisturizer and face cleanser.

Formula 2:vanishing cream

Formula(2):

Rx 20 gm Vanishing cream B.P.C.

Ingredients	Master formula	Scaled formula
Stearic acid	150gm	3gms
White wax	20gm	0.4 gms
White petrolatum	80gm	1.6 gms
Triethanolamine	15ml	0.3ml(7drops)
Propylene glycol	80gm	1.6 gms
Purified water	q.s. 1000gm (655gm)	q.s. 20gm (13.1 gm)

Write calculations

stearic acid: white wax: white petrolatum:

$$\begin{array}{l|l|l}
 150 \rightarrow 1000 & 20 \rightarrow 1000 & 80 \rightarrow 1000 \\
 x \rightarrow 20 & x \rightarrow 20 & x \rightarrow 20 \\
 x = 3 \text{ g} & x = 0.4 \text{ g} & x = 1.6 \text{ g}
 \end{array}$$

• Labeling

$$\begin{array}{l|l|l}
 \text{TEA:} & \text{Propylene glycol:} & \text{Water:} \\
 15 \text{ ml} \rightarrow 1000 & 80 \rightarrow 1000 & \text{water} = 20 - 6.9 \\
 x \rightarrow 20 & x \rightarrow 20 & = 13.1 \text{ g} \\
 x = 0.3 \text{ ml} & x = 1.54 &
 \end{array}$$

1- اول اشي بنجهز الوزنات:

Stearic acid: 3 gm

White petrolatum: 1.6 gm

White wax (bees): 0.4 gm

Triethanolamine: 7drops

Propylene glycol: 1.54 ml

D.W= 13.1 ml

2- بنجيب صحن حراري بنحط فيه stearic acid

وينصير نطحنه بال spatula , بعدين

بنضيف عليه ال white wax وبنحط ال

white petrolatum , وبظل اطحنهم مع

بعض .

3- بنحطه ع الغاز وبنظل نحرك.

4- بنجيب beaker بنحط فيه

triethanolamie مع

propalene glycol و D.w

6- بروح ع الصحن احرك واشوف درجة الحرارة + بجيب ال beaker وبحطه جنب الصحن ع الغاز .

7- بنزل نحرک المادة يلي بالصحن كثير , وبصير ب dropper اجيب المادة يلي بال beaker واضيف ع الصحن واحرك واحط شوي واحرك بس اخلاص بحطهم ب علبة.

(معلومات مهمة للكوييز)

Vanishing cream

Is semisolid emulsion of o/w type that is used topically.

- *Earned its name due to rapid water evaporation leading to rapid vanishment of the cream after application.*
- *Drugs can easily be incorporated into it as aqueous solutions.*
- *Vanishing creams sometimes called stearic acid creams and contain only 15% internal phase volume.*
- *Stearate/Vanishing creams were known for their smooth, dry feel on the skin and their pearly sheen. Chemically they are oil-in-water emulsions consisting of stearic acid, an alkali, a polyol and water. The alkali reacts with some of the stearic acid to form the emulsifier.*

Procedure

1. Melt the first 3 ingredients (oily phase) in a beaker using hotplate.
2. Mix triethanolamine, propylene glycol and water and heat the mixture to 75°C.
3. Pour the aqueous phase (step 2) into the oily phase (Step1) while they are both hot with mixing
4. Mix constantly till congealed
5. Place in a jar

Use of ingredients.

- (1) **Stearic acid:** part of the emulsifying agent.
- (2) **White wax:** stiffening agent.
- (3) **White petrolatum:** emollient.
- (4) **Propylene glycol:** Humectant, moisturizing agent.
- (5) **Triethanolamine:** part of the emulsifying agent

Labeling:

- Main Label:
- Auxiliary label:
For external use only.

Storage:

- Store in a cool place.*
- Store in a wide-mouthed jar.*

Calculations

Faculty of Pharmaceutical Sciences

Lab# 6: Report Sheet

Dispersed Systems: (Semisolids) Creams

No.	Student name	Section	Date	Group no.
1				
2				
3				

Formula(1)

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Triethanolamine	15ml	0.3ml(7drops)
Propylene glycol	80gm	1.6 gm
Purified water	q.s. 1000gm (655gm)	q.s. 20gm (13.1 gm)

Write calculations

stearic acid:	white wax:	white petrolatum:
$150 \rightarrow 1000$ $x \rightarrow 20$ $x = 3g$	$20 \rightarrow 1000$ $x \rightarrow 20$ $x = 0.4g$	$80 \rightarrow 1000$ $x \rightarrow 20$ $x = 1.6g$

Labeling

TEA:	Propylene glycol:	Water:
$15ml \rightarrow 1000$ $x \rightarrow 20$ $x = 0.3ml$	$80 \rightarrow 1000$ $x \rightarrow 20$ $x = 1.6g$	$water = 20 - 6.9$ $= 13.1g$