

Experiment 7

Semisolid dosage forms: Dispersed Systems Ointments and Pastes

Creams
2 phases

Ointments: → 1 phase

Are a homogeneous, viscous, semi-solid intended for external application to the skin or mucous membranes".

زيتي
drug + oleaginous
ointment

- They are used as emollients or for the application of active ingredients to the skin. مدرج
- However, pharmaceutical manufacturers use the word ointment more specifically to indicate that a drug is incorporated into an oleaginous ointment base; for example, the name Hydrocortisone Ointment means that hydrocortisone is incorporated into an oil-type semisolid base.

Mixing ← Lavigation:

Grinding of Solid in presence of non-solvent liquid to obtain a paste (by mortar and pestle or slab and spatula). بوجود Tile

Formula (1):

Rx. 20-gm Zinc and castor oil ointment, BP

Ingredients	Master formula	Scaled formula
Zinc oxide finely divided	15 gm	1.8 g
Castor oil	40 ml (d=0.961g/ml)	4.61 g → 4.8 ml
Cetosteryl alcohol	25 gm	3 g
White bees Wax	50 gm	6 g
Arachis oil (peanut oil)	35 ml (d= 0.915g/ml)	3.84 g → 4.12 ml
Total	160.46 g	20 g

$40 * 0.961 = 38.44$

$35 * 0.915 = 32.02$

$F = \frac{20}{160.46} = 0.12$

يسهل absorption الماء (التي يمتصها الجسيم)

- This formula is a type of absorption ointment base that is used for the relief of symptoms of nappy rash and as a water resistant emollient barrier for dry skin conditions and nappy rash.
- Absorption bases help absorb water from skin discharge. They consist of a hydrocarbon base combined with water in oil emulsifier such as fatty alcohols.
- Fatty alcohol (Cetosteryl alcohol) are the emulsifier in this form that allow the absorption of water.

Procedure:

1. Melt together the beeswax, cetosteryl alcohol, and arachis oil at the lowest possible temperature.
2. Warm the castor oil in separate dish
3. Using a tile and spatula, lavigate zinc oxide with a suitable quantity of castor oil until smooth
4. Transfer the suspension in step 3 to the dish containing the melted ingredients taking care to leave virtually no materials on the tile. Mix well, add the rest of castor oil and stir until cold.

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هذه الخطوة
مش مهمة بوضع
اللاب لكنها مهمة
لما توصف للمريض
خلال التحضير جزء من التركيبة
يسرع عليه loss ويقلله
فبصيف 10% على التوتال

Recommended doses and dosage schedules:

As required, up to four times daily or at each nappy change. The product is suitable for use by adults, children and the elderly

Use of ingredients:

- (1) **ZnO**: astringent, soothing agent.
- (2) **Castor oil**: emollient, levigating agent
- (3) **Arachis oil**: emollient.
- (4) **White bees Wax and Cetosteryl alcohol**: emollient + vehicle for other ointment.

Labeling:

- Main Label:
- Auxiliary label:
 - For external use only.*
 - Keep all medicines out of reach of children.*
 - Zinc and Castor Oil Ointment BP contains Arachis Oil (peanut oil) and should not be applied by patients known to be allergic to peanut.*

Storage:

Store in a cool place.
Store in an airtight container, (a wide-mouthed plastic jar or tube).
Avoid prolong exposure to temp above 30°C.

Use of preparation:

For diaper rash, astringent, protective.

Pastes:

Paste are semi solid preparation for external use. They consist of finely divided powder combined with non- solvent molten base. .

- • Contain more solid material than ointments (at least 20%)
- • Stiffer than ointments
- • The stiffness ^{مصلابة} reduce the percutaneous absorption potential of any drug incorporated in the paste ^{عن طريق الجلد}
- They are used for their:
 - 1) protective action ^{إفراز مهلي}
 - 2) and ability to absorb serous discharge ^{سحرات} from skin lesions ^{بؤر} and wounds. They also can absorb harmful chemicals such as ammonia that is released by bacterial action on urine and so are often used in nappy products
 - 3) and ability to remain in place longer than ointments
 - 4) E.g. Zinc Oxide paste USP, Carboxymethylcellulose Sodium Paste USP, Triamcinolone Acetonide Dental Paste USP, Tooth paste.

Formula (2):

Rx. 50 gm zinc oxide paste (Lassar's Plain Zinc Paste):

$$F = \frac{20}{950} = 0.021$$

Ingredients	Master formula	Scaled formula	Uses
Zinc oxide	150gm	3.15 gm	Protective, slightly astringent, and slightly antiseptic.
Starch	50gm	1.05 gm	Filler
White soft paraffin	750gm	15.75 gm	Ointment base
Total	950 gm	≈ 20 gm	

$$= 19.95 \text{ gm}$$

- Zinc oxide paste is a very thick topical ointment. People use it as a skin protectant and to treat a variety of skin irritations.

Procedure:

1. Melt White soft paraffin with minimum heat (at the lowest possible temperature)
2. sieve zinc oxide and starch powder
3. mix the powders in a mortar using the “doubling-up” technique (Geometric mixing).
4. levigate the mixed powders with a suitable quantity of the semi-molten base on a tile
5. A considerable shearing force should be applied to avoid a gritty product
6. Add the remaining semi-molten base and triturate with the powder/fatty base mixture on the tile until the powder is dispersed in the base.

The "doubling-up" techniques (Geometric mixing):

1. Weight the powder present in the smallest amount (powder A) and place in the mortar
 2. Weight the powder present in the next largest amount (powder B) and place on labeled weighing paper
 3. Add approximately the same amount of powder B, as powder A in the mortar
 4. Mix well with pestle
 5. Continue adding an amount of powder B that is approximately the same as that in the mortar and mix with the pestle, i.e. doubling the amount of powder in the mortar at each addition
 6. If further powders are to be added, add these in increasing order of volume as in steps 3,4, and 5 above.
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Labeling:

- Main Label:
- Auxiliary label:
For external use only.
Keep all medicines out of reach of children.

Storage:

Store in a cool place.
Store in an airtight container, (a wide-mouthed plastic jar or tube).
Avoid prolong exposure to temp above 30°C.

Use of preparation:

Astringent
