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DEVELOPMENT OF ALCOHOL FREE SOLID PERFUME BY USING NATURAL WAXES

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ABSTRACT

The formulation of solid perfume using beeswax, carnauba Wax, almond oil, sandalwood oil, rose oil and Vitamin E capsule. In this formulation carnauba wax is a advance ingredient to increase the stability in different temperature. In the solid perfume the study of the formulation and evaluation parameters for the vast advance preparation for the fragrance intensity and longevity. Sandalwood oil and Rose oil create woody – floral fragrance. This type of fragrance helps to change mood, reduce anxiety, represent positive vibes and increase confidence. The formulation of the solid perfume is melting the natural waxes i.e. beeswax and carnauba wax and essential oils then allowing mixture solidify in nature. The various different evaluation parameters to check the quality, safety and efficacy of the solid perfume. In the evaluation parameter include organoleptic characters, physical parameters and chemical parameters. Solid perfume is the long lasting scent, alcohol free, unique application, travel friendly and skin friendly product.

KEYWORDS: Vast advanced perfume, fragrance, essential oils, long-lasting, alcohol free, and skin-friendly.

AIM: Development of alcohol free solid perfume by using natural waxes

Formulation and evaluation of solid perfume stick, Solid perfume formulation by using a Combination of natural waxes, oils and essential oils. Essential oils are popularity as a sustainable alternative to traditional liquid perfume. There are vast advances made when it comes to developing new fragrance and scent.

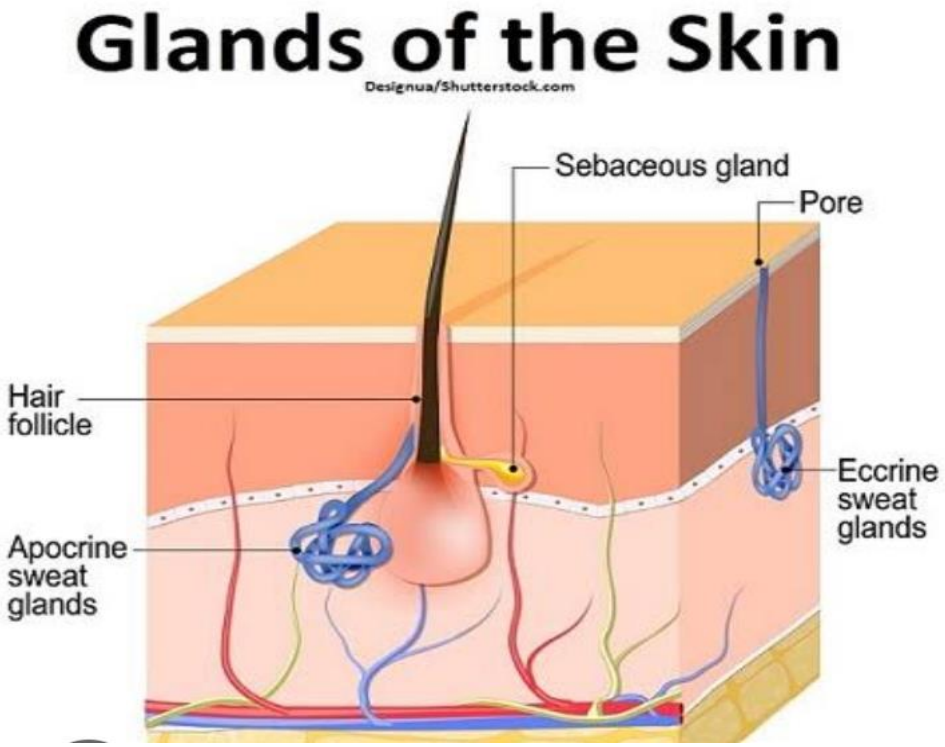
OBJECTIVE OF SOLID PERFUME STICK

* To prevent skin from bad and unpleasant odour.
* To improve self-confidence.
* To produce the self-feeling of optimism.
* To prevent skin problems like dry, greasy and sensitive skin.
* To provide skin hydration and nourishment.

INTRODUCTION

Solid perfume stick are made to avoid the unusual smell from the body, which is bad and unpleasant odour comes because of the bacteria on skin and sweat. The bacteria around sweat glands helps to generate sweat by breakdown of acids into sweat. Solid perfumes are mainly made up of natural wax like bees wax, carnauba wax or Shea butter and also used fragrance oils or essential oils like rose oil, sandalwood oil, etc. Instead of water medium, It is solid compact, portable and leakage proof so because of its waxy texture it is reapplied easily on outdoors. The another plus point of solid perfumes, cream perfumes or solid colognes are offer long-lasting scent retention on skin in alcohol-free form unlike liquid perfumes.

Solid perfume are nowadays known as new product and not usually carried by common people but this has its ancient traditional usage from Egypt ancient civilization. Besides its historical value, its becoming a popular candidate in fragrance industry. This perfumes are skin friendly and also act as moisturizer due to containing the oil extract in it. It's creamy texture absorb wisely in skin that gives prolonged fragrance compared to liquid perfumes.



In human body around 3 to 4 million sweat glands are present. Such sweat glands are divided in 2 types:
1. Eccrine gland
2. Apocrine gland

1. Eccrine gland
It is a type of sweat glands, this glands are spread all over the skin. When the temperature increases and heat produced in body then these sweat glands activated and release sweat. Thus, that helps to regulate the body temperature as thermoregulation through cooling sensation. Also the sweat gland usually removes the waste product like ammonia, urea and salts from human body. Some sweat can be itchy and excessive in amount which responsible for the producing bad odour causing bacteria around or all over the skin.

2. Apocrine gland
Apocrine glands are mostly produce high amount of bad odour from sweat. These glands are present in genital area, breast, eyelids, armpits, etc. In this sweat glands they produce high level of protein in which bacteria breakdown is occurs rapidly.

Solid perfume stick
It also called as deodorant stick, solid balm, etc. It is formulated by using the natural ingredient like Bees Wax, Shea Butter, Various types of essential oils, fragrances like rose or sandalwood etc. It is the modern and also ancient type of fragrance producer which creates most of the different and natural type of perfumes. It is also long lasting and chemical free which help for safe applying on skin without any irritation. It is used to develop traditional smell which smells too good. It is obtain in various flavour and fragrance which gives confidence and help to remove bad odour.

Types of solid perfumes
1. Floral solid perfume: Jasmine, rose and lavender.
2. Fresh solid perfume: lemongrass and tea tree
3. Oriental solid perfume: cinnamon and ginger
4. Woody solid perfume: sandalwood and cedar wood

Requirements and Benefits of Solid perfume stick
- Solid perfumes are better than liquid perfumes because it didn't use alcohol in it instead of this it uses the natural oils
- More natural ingredient uses as compared to traditional liquid perfumes.
- There are no worries about leakage in solid perfume stick.
- Solid perfume are non-irritant, acts gently on skin, mild and soothing feeling on skin.
- It is an advanced perfume technology gives various fragrances.
- It is skin friendly, safe for sensitive skin, and portable to anywhere.
- Solid perfume having natural waxes which gives moisturizing properties and gives long lasting fragrance.
- It do not contain volatile organic compounds and also eco-friendly because of less wastage.

History of solid perfume stick
1. firstly it found to be used in Egypt ancient time around c.3000BCE 500BCE which was made by using various wax, oils and aromatic pastes.

2. In Renaissance period (500-1600 CE) used animal fats, flower extract, herbs, etc. it is not in stick form.
3. In 18th and 19th century in the fragrance industry the solid pomades are developed.
4. In early 20th century the solid perfumes are comes in lipstick like structure which are easily transportable and leakage proof.
5. later on it known as cosmetic product. And evolved as skin friendly, convince and portability focused product formulation.
6. In modern era Eco and Niche Revival rise of natural, sustainable and alcohol free solid perfume stick focused on the long lasting fragrance.

Advantages

- Leakage proof
- Long-lasting
- Skin friendly
- Portable
- Non irritant
- Natural and alcohol free

Purpose of solid perfume

1. To regulate personal hygiene and basic care.
2. It is non alcoholic, portable and skin friendly.
3. Used over sensitive skin because it is non irritant.
4. This perfume is made up of natural ingredient like wax, butter, essential oils, all are organic compounds.
5. It gives smooth and pleasant fragrance for long time.
6. Helps to increase confidence and spread positive vibe around the person.
7. It can be used as to remove stress in some cases.

How to apply solid perfume stick ?

It is shown in below image.

Pulse points where to apply solid perfume stick ?

In women

a. Neck
b. Shoulder
c. Wrist
d. Inner elbow
e. Behind the ears
f. Below your midriff
g. Calves
h. Ankles
i. Chest
j. Behind your knee

In men

a. Shoulder
b. Inner elbow
c. Wrist
d. Chest

e. Lower jaw and neck
f. Forearm

Ingredients used mostly to formulation of solid perfume stick

- Bees wax
- Carnauba wax
- Vitamin E
- Essential oils

Like Rose oil, Sandalwood oil, Almond oil.

Ingredients Used in Solid Perfume

- **Bees Wax**

Bees wax is the base of the solid perfume. It is solid in nature. It helps to mixing the all ingredients and lock up the odour in the solid perfume. Bees wax helps to increase the stability and texture. It is skin friendly, non toxic and non irritant and also provide moisturising effect to the skin.

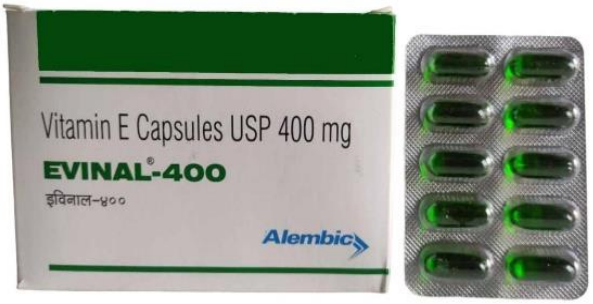
- **Carnauba Wax**

Carnauba Wax is the solid state and highest melting point (82°-86°c). Carnauba Wax helps to increase stability, long-lasting and heat resistance product. In the high temperature region solid perfume are unstable in nature, the carnauba Wax prevent from melt. It is used as a solidifying agent in solid perfume.

- **Sandalwood and Rose Oil**

It is woody – floral type of fragrance. This combination of fragrance is last longer fragrance on the skin. Sandalwood oil helps to skin softening and moisturizing. Sandalwood oil enhance focus and relaxation. Rose oil helps to decrease stress, anti anxiety and emotionally balancing effect. It also decrease evaporation rate in solid perfume. Suitable for all skin types.

- **Vitamin E capsule**



Vit.E is the used in the solid perfume for increase the shelf life of the product. It has natural antioxidant and provide moisturising effect to the skin. Vit E is the additional ingredients in the product.

- **Almond oil**

Almond oil is used as a essential oil. This oil is used as a vehicle in the solid perfume. It's provide nourishing and moisturizing effect. It is golden yellow and odourless oil. It include vitamin, minerals, fatty acids and antioxidants. Almond oil is also known as carrier oil.

Equipment Required to method of preparation for solid perfume

- Double Boiler
- Mixing and Blending Equipment
- Measuring Equipment
- Molding and Packaging Equipment
- Cleaning and Safety Equipment
- Texting Equipment

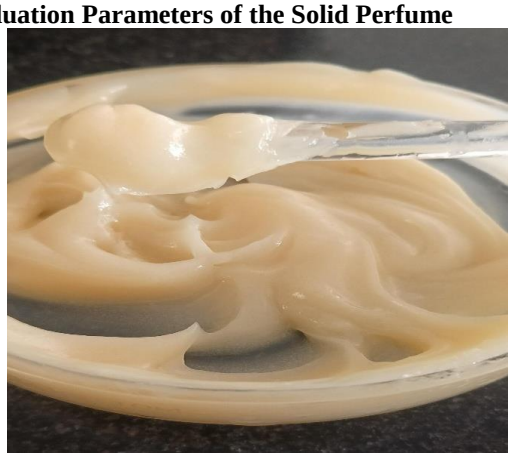
Formulation of Solid Perfume for 20g

Ingredients	Quantity	Function
Bees Wax	3g	Soft structuring agent
Carnauba Wax	1g	Hardening agent
Almond oil	15.4 ml	Carrier oil (base)
Sandalwood oil	1.0 ml	Fragrance
Rose oil	1.1 ml	Fragrance (floral)
Vit E	2-3 drops	Antioxidant

Procedure

1. Take bees wax and carnauba Wax in a breaker
2. Melt using water bath (carnauba Wax need high temperature)
3. Add almond oil and mix properly
4. Cool mixer 55-60°c
5. Add sandalwood and Rose oil gently
6. Add Vit E Pour into container and allow to solidify at room temperature

Evaluation Parameters of the Solid Perfume



- **Physical Parameters**

1) Appearance
2) Colour
3) Odour
4) Texture
5) Homogenity
6) Spreadability
7) Melting point
8) Skin irritation test
9) Stability study
10) Fragrance retention time

- **Chemical Parameters**

1) pH Determination: pH test is determine the skin compatibility. In the solid perfume their is does not water content in the formulation. It is measured by dispersing the sample in the distilled water.
2) Acid Value: Acid value is the number of mg of potassium hydroxide required to neutralize free acids in 1 g of sample. Acid value test is used to measure the amount of free fatty acids present in the perfume.

Lower acid value = better quality
Acid value = V×N×56.1/W
where, V = volume of KOH in ml
N = normality of KOH
W = weight of sample
56.1 = molecular weight of potassium hydroxide

3) Saponification Value: Saponification value is the amount of KOH needed to saponify fats in 1g of sample.

It indicates the amount of ester (fat/wax) .Also used as check purity of waxes.
Saponification value = (B-S)×N×56.1/W
where, B= volume of blank reading in ml
S= volume for sample
N= normality of KOH
W= weight of sample

4) Moisture content: Solid Perfume is a oil based , small amount of moisture may be present.when excess amount of moisture is present in the formulation leads to microbial growth and instability.

Moisture content % = W1 – W2/W1×100
where, W1= Initial weight
W2= Final weight

RESUILT AND DISCUSSION

Sr.no	Physical parameter	Methods/ Reference	Chemicals /Apparatus	Acceptable range	Observed Result
1.	Appearance	Visual inspection	None	Smooth, uniform, no cracks	Smooth, pale yellow, uniform
2.	Color	Visual observation	None	Uniform color	Creamish uniform color
3.	Odor	Organoleptic evaluation	None	Pleasant, characteristics fragrance	Matching fragrance added, pleasant
4	Texture	Touch test	None	Smooth, non gritty	Waxy ,finish,

					creamy smooth texture
5	Homogeneity	Visual and smear test	Glass slide ,cover slip	Uniform distribution	No lumps
6.	Spreadability	Glass-slide method	2-glass slide 100gm weight	Easy to spread	No drag 0.8 sec to spread
7	Melting point	Capillary method	Liquid paraffin, thermometer, capillary	50-60°c (depending on wax used)	54-58°C
8	Skin irritation test	Patch test	Finn chambers, volunteers	No irritation and Redness	No irritation observed
9	Stability study	Storage at different temperature	Stability chamber, sealed container	No change in color, texture	No phase separation /color/odor
10.	Fragrance retention time	Time-based observation	Stopwatch, volunteers	Long-lasting (4-6 hr)	5-6 hrs on forearm skin

Sr.no	**Chemical parameter**	**Methods/ Reference**	**Chemical / Apparatus**	**Acceptable Range**	**Observed Result**
11	pH determination	Take about 1gm of solid perfume+dissloves in 10-20mL of distilled water or ethanol. Measures the pH using a digital pH meter.	pH meter, distilled water or ethanol	5.0-7.0 (Skin Friendly)	6.1-6.8 Skin compatible
12	Acid Value	Weight 1gm of solid perfume sample+add in 50 ml distilled water or ethanol Add 2-3 drops of phenolphthaleine indicator Titrate with 0.1 KOH until a light pink color appears Calculate the acid value	0.1 N KOH, Phenolphthaleine indicator, ethonol: ether 1:1	Low(<2)	1.4 mg KOH /g
13	Saponification value	Weight 1-2 g of sample+ 25 ml of KOH with 0.5 HCL using phenolphthaleine indicator	2 ml of KOH, 0.5 HCL, phenolphthaleine indicator	150-250mg KOH/g	198 mg KOH /gm
14	Moisture content	Weight the initial weight of the sample. Dry the sample in a hot air oven at 105°C for about 1-2 hrs Weight again after drying Calculate the loss in weight which represent moisture content	Sample or Hot air oven	0.5-2.0 %	1.2 %

FUTURE SCOPE

- Free alcohol formulas-These sticks appeal with a sensitive skin and provides a gently alternative to liquid spray
- Travel friendly design are provided.
- As a solid materials, these sticks are contributed to reducing water usages in manufacturing.
- Sustainability and eco-friendly formulations.
- The market moving away from gendered perfumes with many others brands offering the versatile and gentle-neutral scents.
- Water less beauty.
- Functional wellness or Fragrance.
- Perfumes sticks skincare, adding niacinamide, hyaluronic acid and ceramides to pulse points.
- Sweat activated release
- Biodegradable and waterless beauty.

CONCLUSION

promising alternative to traditional Liquid fragrances. Solid perfumes are not only more Environmentally friendly due to reduced packaging and the absence of alcohol but also In conclusion, the development and formulation of solid perfumes present a offer a unique sensory Experience with their longer-lasting scent and ease of application. The herbal solid perfume formulation not only delivers a long-lasting and pleasant fragrance but Also provides added benefits for skin health. Additionally, the Product's stability, smooth texture, and excellent Spreadability further enhance its appeal.

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