

Hong Kong Student Science Project Competition 2023

Team Number: SABC107

Project Title:

Harmonie - Natural, Smoothing Face Cleanser Specialised for Sensitive Skin with Fragrance

Project Type: Invention

To our best knowledge, there are * similar works in the market; related product links are as below:

<https://hk.iherb.com/pr/cetaphil-gentle-foaming-cleanser-dry-to-normal-sensitive-skin-fragrance-free-8-fl-oz-236-ml/92053>

https://bbbeauty.com.hk/products/ultra-facial-cleanser?variant=32978295652437¤cy=HKD&utm_source=google&utm_medium=cpc&utm_campaign=google+shopping&gclid=Cj0KCOiA0oagBhDHARIsAI-BbgdFELDLiZDrsWVIT6-nLS8hm2ulc4ti_6M9RvI_0q8MMf8NfHtbsAaAv1GEALw_wcB

The enhancement our project made / the difference with related products are:

Our design explores the correlation between fragrance and mental health, thus influencing users' mood.

I. Background

Acne vulgaris involves blockage and inflammation of pilosebaceous units (hair follicles and their accompanying sebaceous gland), a condition most prominent among adolescents. This is how Harmonie is born, the perpetual embodiment of beauty and perfection. Taking inspiration from commonly shared experience among teenagers, daily applications of such foamy face cleanser is highly recommended to moisturise and cleanse, with a lasting soothing and refreshing sensation. In accordance with the United Nations Sustainable Development Goals, we aim to attain good health and well-being among the community while being responsible producers.

Studies in recent years such as Herz R.S. Aromatherapy facts and fictions have shown that olfactory stimulation through fragrance inhalation plays a crucial role in the physiological effects of mood and emotions, with its significance gradually increasing in the medicinal and cosmetic industry. There are various methods to administer fragrances, including inhalation and application on skin. We aim to utilise this effect by giving our face cleansers pleasant fragrances to provide a soothing user experience for our consumers that will elevate their mood.

We have researched varying samples of smells, including mixtures of different scents, and conducted a survey at school to see which fragrance is most preferred by teenagers. According to a white paper entitled Scents and Moods written by Susan Minamyer, M.A. in Psychology, inhalation of citrus smell in rats affected mood altering hormones. In the case of humans, these fragrances provide a beneficial effect on the limbic sector of our brains, which controls emotions and memory formation. Camellia is also shown to emit a light floral smell that causes a tranquil effect to provide comfort. Therefore, we have chosen these calming aromas for Harmonie for good user experiences. We hope that Harmonie can satisfy the need for good skin care while providing a satisfying experience at the same time.

II. Objectives

Acne vulgaris is a condition most prominent among adolescents. This is how Harmonie is born, the *perpetual embodiment of beauty and perfection*. Taking inspiration from commonly shared experience among teenagers, daily applications of such foamy face cleanser is highly recommended to moisturise and cleanse, with a lasting soothing and refreshing sensation. In accordance with the United Nations Sustainable Development Goals, we aim to attain good health and well-being among the community while being responsible producers.

III. Methodology

Phase A : Distilled water acts as a solvent while Kleasol TST provides viscosity and high transparency.
 Phase B : Plantacare 2000 creates perfect synergy of mildness, foam performance, effective cleansing and dermatological compatibility, specialised for sensitive skin. LS30 is an excellent foaming agent that exhibits optimum performance at mildly acidic to neutral pH. CAPB makes molecules slippery so large insoluble chunks are eliminated. Glycerin increases skin hydration, relieves dryness, and refreshes skin surface. MAP30K has excellent foaming power, improving cleansing capacity. Amitose R provides skin conditioning benefits to improve skin texture. MCT protects the skin from any foreign microorganisms. Jojoba oil golden moistens skin and relieves dehydrated, ultra-sensitive skin.
 Phase C : Propanediol encourages water retention and maximizes the moisturizing ability of glycerin.
 Phase D : Iscaguard PEG is a clear colourless liquid preservative which can effectively prevents the growth of bacteria, fungi, and molds and is harmless to human skin.
 PhaseE : TEA maintains balanced pH and stabilises emulsion can attain a preferred cream-like state to the product.

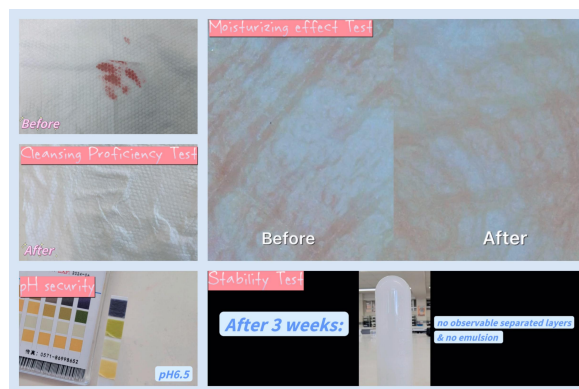
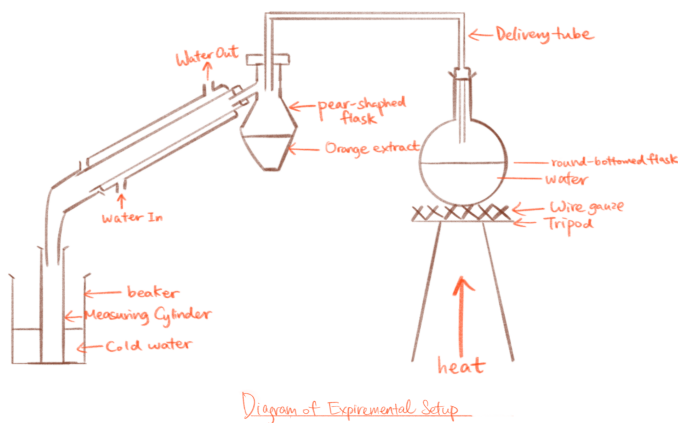
Multiple in-house performance tests have been conducted.

First, moisturising effect. Under the magnification of Max-See Digital Microscope, dry skins are hydrated as flaky skins improve. Over 95.6% of interviewees have reported an alleviation of skin tightness.

Second, cleansing proficiency. Apply cosmetic blush on wash cloth. Rub vigorously with Harmonie. Compare the faded colour with the original.

Third, pH stability. The percentage of TEA has been adjusted to the recommended pH 5.5 optimised for human skin.

Lastly, stability is ensured by placing Harmonie unattended for 3 months with optimum state preserved, no observable separated layers, implying emulsion did not occur with the assistance of preservatives.



Performance Tests

IV. Design of Invention

Under the pandemic, skin problems had been rising due to the frequent usage of masks. Oily skin, acnes and rashes are some of the most common skin problems teenagers encounter. This has raised our attention towards the importance of maintaining skin care through using suitable face cleansers. Taking inspiration from commonly shared experience among teenagers, we've designed Harmonie for teenagers with low sensitivity, high moisturising effect and cleaning proficiency. Concerning the stressful mood that teenagers face nowadays, we've also added small amounts of fragrance extracted

from fruits and flower petals.

Citrus fragrance is characterised by its zesty and fresh notes that are desired for the spring/summer months or warmer, sunnier climates. This helps the user feel rejuvenated and be able to take a breath of fresh air. Warm coloured themed packaging design shows positivity, energy and radiating sunshine.

Floral fragrances allow the user to relax, relieving anxiety or depression. A cooler tone is used to evoke a sense of tranquillity and calmness. When inhaled, the scent molecules in essential oils travel from the olfactory nerves directly to the brain and impact the amygdala, the emotional centre of the brain.

V. Application / Market Need

In view of the United Nations Sustainable Development Goals, by raising people's awareness towards skincare, a society with its focus concentrating on good health and well-being can be cultivated.

Based on a research conducted by Precedence Research, the global acne treatment market size is expected to hit around USD 16.9 billion by 2030 from valued at USD 9.4 billion in 2021 and poised to grow at a compound annual growth rate (CAGR) of 6.73% during the future period 2022 to 2030.

Our facial cleanser places focus on the excessive oil secretion of the skin and consequently mitigation of its adverse effects on skin conditions. Since dermatologists have evidenced that foaming cleansers usually cause irritation which results in further inflammation... and acne is a chronic inflammatory condition. More inflammation subsequently leads to more obvious and reddened acne lesions. As a result, the foaming effect is not as significant as products available in the market.

VI. If your team will compete for the Sustainable Development Award, please indicate the specific sustainable development goal the project is related to, and provide justification for competing for this award. (Word limit: 300 words)

Refer to pages attached

VII. If your team will compete for the Social Innovation Award, please list the target group or social issue the project focuses on, and provide justification for competing for this award.

Refer to last page

VIII. Conclusion

Harmonie is an all-round cleanser which goes in harmony with users' skin, with a refreshing effect aimed at oily skin. We aim to solve the problem of overactive oil glands among teenagers, and at the same time providing a moisturiser for the face that can be applied daily.

□ Our project is developed based on previous project and the enhancement is below:

We have utilised the correlation between mood and fragrance to improve our face cleanser. A new foaming agent 'LS30' is used instead of coconut which is naturally produced from fatty acids and amino acids to increase the foaming effect and provide mild detergency. Adjustments on the percentages of chemicals have also been made to further maximise the moisturising ability. Natural preservative is added to increase the shelf life of the face cleanser. The container of the face cleanser is changed from a pump bottle to a tube, allowing the user to squeeze the face cleanser out more easily. New design is used to represent energy and tranquillity in the two products with different fragrance.