

Economical Organic Senna Alata Skin Balm Prepared Via Infused Oil Method

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Abstract: Senna Alata contains tannins, alkaloids, flavonoids, terpenes, anthraquinone, saponins, and phenolics which is beneficial to reduce inflammation in skin with minimal side effects. Senna Alata has been widely used to treat a lot of skin diseases. Commonly, Senna Alata used traditionally to treat skin diseases like ringworm and eczema, but it also can treat diabetes, asthma and more. In modern skin cream, it contains tropical steroid specially medicated to place it on skin which can give harmful effects on user. The price of skin cream using Senna Alata extract in local market also has been risen unreasonably and cause patients with skin disease hard to find effective remedies with affordable price. Therefore, the objective for this study is to extract Senna Alata leaves using infused oil method and used it as an ingredient to produce a skin balm. This study also target the price of skin balm per container below RM 10. Senna Alata oil extraction is initially carried out using infused oil method prior to produce the balm. Lab test is then carried out to measure the hazardous substance (As, Pb, Cd, Zn). The result indicates no presence of those substances in the skin balm produced. The total cost of skin balm per container is RM 6.27.

Keywords: Mercury, Senna Alata, Skin balm, Steroid

1. Introduction

One of the traditional medicines based on plant is Senna Alata or Cassia Alata. This plant come with various of benefits for human health. Senna Alata has spreadly used to treat a lot of diseases. Commonly, Senna Alata used traditionally to treat skin diseases like ringworm and eczema, but it also can treat diabetes, asthma and more. Recent study shows that senna contains components such as phenols, tanins, saponins, alkaloids, steroids, flavonoids, and carbohydrate [1]. Each of these components displays diverse biological activities such as antimicrobial, antifungal, anticryptococcus, antibacterial, antitumor, anti-inflammatory, antidiabetic, antioxidant, wound healing, and antihelmintic activities [1].

The first objective of this study is to produce skin balm and carry out extraction of Senna Alata active ingredients using Infused Oil Method and cost less than RM 10. The second objective is to study the product market and demand at international e-commerce platform. This study also check the parameters of substances in the skin balm produced in the laboratory. The parameters tested in the skin balm produced is arsenic, cadmium, mercury, and lead. These contents need to be test in every remedy or cosmetic products in the lab to make sure that the hazardous substance does not contain in the skin balm. The three metals, lead, mercury and cadmium, and the metalloid arsenic have all caused major human health problems in various parts of the world [2]. Mercury is banned in cosmetic products because it can be harmful to health. It can be absorbed into the body and cause damage to the kidneys and nervous system and can interfere with the brain development of young or unborn children [3]. The overt toxicity of these elements has been recognized for many years indeed, the harmful effects of lead were known as far back as the second century BC in ancient Greece [4].

In modern skin cream, it contains steroid (*eg*: hydrocortisone, hydroquinone) specially medicated to place it on skin. Basically, steroid divide to four group by its strength which are mild, moderately potent, potent, and very potent. Topical steroids can be purchased at pharmacy without doctor advise which it can harm the patient as steroid has its side effect [5]. For an example, hydrocortisone is allowed to be used once or twice a day for seven days. The side effects that can happens when someone using topical steroids are burning and stinging when its be taken for first time [6]. Some serious side effects could happen when using strong hydrocortisone such a permanent stretch mark (*striae*), bruising, discoloration, or thin spidery blood vessel (*telangiectasias*). It also could worsen skin disorders such as can, *rosacea*, and *perioral dermatitis*. Therefore, this study is to extract senna Alata leaves to be used in skin cream treatment. Beside tannins, alkaloids, flavonoids, terpenes, anthraquinone, saponins, and phenolics it also contains steroid which is sufficient to reduce inflammation in skin without to worry the side effects on skin as it all organic substances [2].

The price of skin cream using Senna Alata extract in local market has been risen unreasonable and cause patients with skin disease hard to find effective remedies with affordable price. So, the target price for the produced skin balm is under RM 10 for one container. E-bay have been chosen as the international e-commerce platform that need to study the product market and demand.

2. Materials and Methods

2.1 Production of Skin Balm

Production of Senna Alata skin balm requires a lot of materials. The main ingredients to produce skin balm is carrier oil (75% consumed in skin balm), natural butter (10%), wax (15%), essential oil (2%), and vitamin E (0.1%). All the main ingredients are needed to achieve the perfect skin balm texture. Senna Alata oil extraction process need to be carried out prior to the production of Senna Alata skin balm. The simplest extraction is using infused oil method [7]. Senna Alata leaves need to be prepared prior to the infused oil process. The leaves must be dried at least a day before the process to remove excessive moisture [8]. The excessive moisture can shortened the life span of the end product and make the product not last for long period. **Figure 1** show the procedure to extract Senna Alata extraction.

The preparation to make the balm also used the double boiler. The accurately weighed amount of ingredients like essential oil, beeswax, carrier oil is melted in a double boiler container with boiling hot water below the container. This allows only heat from water steam to melt the ingredients. Perform continuous stirring or heated till it melts completely. Then, this mixture could be poured into clean and lubricated moulds and allow them to cool at room temperature to solidify the waxes to achieve the balm texture.

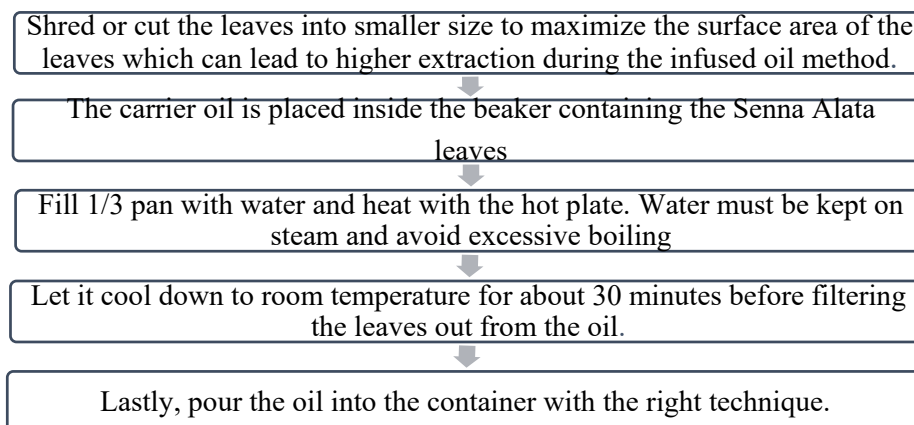


Figure 1 : The procedure of Senna Alata oil extraction

2.2. Lab Test Study to Check Hazardous Substances in The Balm

The consultation with a cosmetic supplier encouraged to conduct a test for mercury, arsenic, lead, and cadmium in the products. Products with inorganic mercury can be harmful, as mercury can be easily absorbed through the skin. Inorganic mercury toxicity may lead to nephrotic syndrome, decreased renal output, renal failure, and other severe health effects, affecting different parts of the nervous, digestive, and immune systems, and organs, such as lungs, kidney, skin, and eyes [9] . The lab testing was run at My CO2 Sdn. Bhd. at Johor Bahru.

Table 1: The amount of parameter in the balm produced

Test Description	Result (mg/l)
Arsenic	0 (Not detected)
Lead	0 (Not detected)
Cadmium	0 (Not detected)
Mercury	0 (Not detected)

Table 1 shows the amount of hazardous substance in the balm produced. It shows that the hazardous contents like arsenic, cadmium, lead and mercury are not present in the skin produced. That is means the skin balm is free from dangerous content that can harm people health and patients can use it without worrying the side effect of the skin balm.

3. Results and Discussion

3.1 Cost to produce single balm

Table 2: Pricing list for single balm

NO	INGREDIENTS	USAGE	PRICE (RM)
1	Senna Alata	50 strands	8.00
2	Container	10 pieces	11.30
3	Sunflower Oil	100 mL	4.90
4	Beeswax Oil	100g	11.9
5	Vitamin E	10 mL	10.00
6	Shea Butter	50g	4.90
7	Essential Oil	5 mL	11.70
TOTAL			62.70

Table 2 shows ingredients used to produce about 10 pieces of Senna Alata skin balm. The skin balm has been successfully produced using ingredient and weight ratio test in Table 1. The total amount for these products is RM 62.70 which mean every single skin balm cost around RM 6.30. This shows our production had success to achieve the target where the cost for producing one balm below RM 10.

3.2 Price Comparison

Table 3: The product list sell in Shopee application




NO	PRODUCT	DESCRIPTION	PRICE
1	 <p>Krim Kulit Mujarab</p> <p>BERKESAN PANTAS!!!</p> <p>• Ekzema • Panau • Gatal • Kudis • Psoriasis • Tampi Merah • Kurap • Scabies • Gatal Kulit Kepala • Dan Lain2 Penyakit Kulit</p>	100% organic product	RM 19.90
2	 <p>MENGHILANGKAN MASALAH KEGATALAN KULIT</p> <p>✓ GATAL CELAH PANA ✓ GATAL MISS Y ✓ EKZEMA ✓ KURAP ✓ KAWAP ✓ PSORIASIS ✓ ICABIES ✓ BADANG ✓ RUAM ✓ PANAU</p> <p>RAWAT & SAPU KESAN SEAWAL 3 HARI!</p> <p>100% ORIGINAL</p>	<ul style="list-style-type: none"> • Cream • Guava Tree Terrace • Pearl powder 	RM 20.00
3	 <p>Jolicare OFFICIAL STORE</p> <p>Natural Herbal Ingredients 100% Steroid Free Dermatologist Certified</p> <p>Jolicare™ Cream (Original)</p> <p>Natural Herbal Formula Improve Itchy and Sensitive Skin in 7 Days</p>	<ul style="list-style-type: none"> • Cream • Kochia Scoparia • Cnidium Monnieri • Glycerine • Mint • Steroid free • Alcohol free • No Arsenic • No colouring • 30g 	RM 130

Table 3 shows a few of product sell by other company in Shopee application as a comparison to the selling price of the products. This comparison is made with top product that been used widely that in the e-commerce platform, Shopee. **Table 3** shows the price and the product description for each of the product. It is clearly seen that all of the product are sold at price above RM 10. By using senna alata leaves and infused oil technique used in this study, proven that it this method can save the cost of production and the product can be sell at cheaper price.

3.3 Product Market and Demand (e-Bay)

Figure 3 show the e-Bay sales review for the same type of skin balm. Skin balm (eg: scabies or eczema balm) has a very high demand at international e-commerce platform such as e-Bay since it manages to generate 6723 views on ebay search during 30 days period. Currently, there are 187 million

active users on eBay [10]. This skin balm has been advertised on e-Bay for more than three month and was able to generate \$939 for 90 days. The users reported a good feedback for this product. This proves this product is able to relate to the industrial based problem and has potential in commercialization and provide the benefits for social

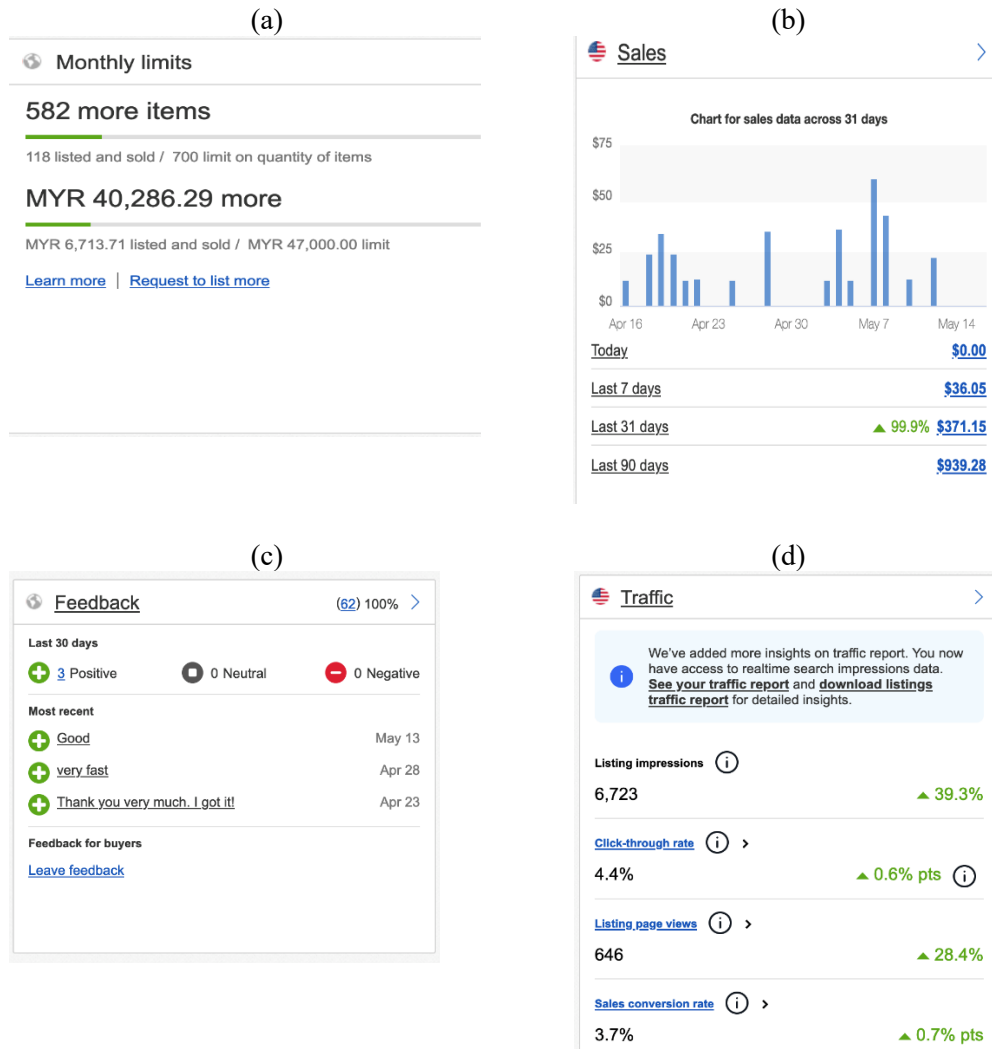


Figure 2: The e-Bay sales review

4. Conclusion

In conclusion, Senna Alata has been successfully extracted and used as an ingredient to produce skin balm. Based on lab test result, the skin balm is safe from hazardous substances. In addition, the cost for each skin balm is below RM10. It has potential in commercialization and benefits to society.

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References

- [1] O. S. Oladeji, F. E. Adelowo, A. P. Oluyori, and D. T. Bankole, "Ethnobotanical description and biological activities of senna alata," *Evidence-Based Complementary and Alternative Medicine*, vol. 2020, pp. 1–12, 2020.
- [2] D. C. Tidy, "Topical steroids for eczema: Types and side effects and information," Patient.info, 26-Jun-2020. [Online]. Available: <https://patient.info/skin-conditions/atopic-eczema/topical-steroids-for-eczema>. [Accessed: 06-Jul-2022].
- [3] Dr. Noor Hisham, "Four beauty products no longer allowed to be sold in Malaysia," The Star, 04-Jul-2022. [Online]. Available: <https://www.thestar.com.my/news/nation/2022/07/04/four-beauty-products-no-longer-allowed-to-be-sold-in-malaysia>. [Accessed: 06-Jul-2022].
- [4] H. A. Waldron, "Lead poisoning in the ancient world," *Medical History*, vol. 17, no. 4, pp. 391–399, 1973.
- [5] S. B. Verma, "Topical corticosteroid misuse in India is harmful and out of control," *BMJ*, 2015.
- [6] "Topical corticosteroids," NHS choices. [Online]. Available: <https://www.nhs.uk/conditions/topical-steroids/> [Accessed: 06-Jul-2022].
- [7] T. Anderson, "Six ways to make herb infused oil for skincare and Salves," Lovely Greens, 02-Mar-2022. [Online]. Available: <https://lovelygreens.com/herb-infused-oil-forskincare-salves/>. [Accessed: 06-Jul-2022].
- [8] "DIY herb-infused oils," HGTV. [Online]. Available: <https://www.hgtv.com/design/makeand-celebrate/handmade/diy-herbal-infused-oils>. [Accessed: 06-Jul-2022].
- [9] "Mercury and Health," World Health Organization. [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/mercury-and-health#:~:text=Health%20effects%20of%20mercury%20exposure&text=The%20inh alation%20of%20mercury%20vapour,induce%20kidney%20toxicity%20if%20ingested>. [Accessed: 06-Jul-2022].
- [10] Y. Lin, "10 eBay statistics you need to know in 2021 [infographic]," *Oberlo*, 23-Sep-2021. [Online]. Available: [https://my.oberlo.com/blog/ebay-statistics#:~:text=One%20of%20the%20very%20first,before%20\(eBay%2C%202021\)](https://my.oberlo.com/blog/ebay-statistics#:~:text=One%20of%20the%20very%20first,before%20(eBay%2C%202021)). [Accessed: 06-Jul-2022].