Available online at
https://ijpncs.uitm.edu.my/index.php/en/

IJPNaCS International Journal of Pharmaceuticals, Nutraceuticals and Cosmetic Science
e-ISSN: 2682-8146

International Journal of Pharmaceuticals, Nutraceuticals and Cosmetic Science
9(2) 2026, 1-15

International Journal of Pharmaceuticals, Nutraceuticals and Cosmetic Science

Ancient Botanical Formula for Modern Skin Science: A Case Study of Hanna Multi Function Cream for Atopic Dermatitis

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ARTICLE INFO

Article history:
Received 20 November 2025
Revised 20 Nov 2026
Accepted 24 April 2026
Online first
Published 30 August 2026

Keywords:
Anti-inflammatory,
Eczema,
Natural oils,
Steroid,
Wound healing

DOI:
10.24191/IJPNaCS.v9i2.01

ABSTRACT

Atopic dermatitis (AD), commonly referred to as eczema, is a chronic inflammatory skin disorder. The management of AD aims to enhance skin barrier repair and alleviate inflammation. Topical corticosteroids (TCS) serve as the primary anti-inflammatory treatment for AD. Prolonged use of TCS may exacerbate skin barrier defects by hindering epidermal proliferation, differentiation and lipid production. Consumers' dissatisfactions coupled with the demand for safe and sustainable alternatives, has led to an increased interest in alternative treatment options. This study seeks to explore the Hanna Multi Function Cream, as a versatile skincare solution. Our research indicates that the synergistic effects of the natural oils utilised offer remarkable moisturisation, effective skin repair and wound healing properties. The anti-inflammatory study showed that the IC_{50} for Hanna Cream was 11.42 ± 0.44 mg/mL, while Xepacort, which failed to achieve 50% inhibition within the tested concentration range. Hanna Cream showcasing superior efficacy compared to topical steroid creams, making it a safe and non-steroidal alternative for eczema. The particles in Hanna Cream are estimated to be 400 times smaller than the diameter of hair follicle pores, allowing them to accumulate within hair follicles and penetrate deeper skin layers. Its lipophilic characteristics promote the partitioning of particles into the lipid-rich matrix, facilitating slow diffusion through cells while simultaneously forming a protective barrier on the skin. The particle size and lipid affinity of Hanna Cream enhance its emollient and occlusive properties. The optimal formulation ratio of Hanna Cream contributes to its Core Healing and Slow Release (C.H.R.) mechanism.

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1. INTRODUCTION

Atopic dermatitis (AD) also known as eczema is a chronic, relapsing inflammatory skin disease caused by an imbalance in the immune response that triggers inflammation, redness and irritation to the skin. It is characterised by redness, dry, itchy, flaky and eroded skin (Duan et al., 2024). AD affects people at all ages but most common in infants and young children. At present there is not a cure but treatment can help to manage the symptoms. Topical creams for eczema include corticosteroids like hydrocortisone often found as 1% cream, which are often the first line of treatment for mild cases to help to reduce inflammation and itching. Moisturizers, including those with ceramides like CeraVe, are also crucial for managing eczema by keeping the skin hydrated and preventing flare-ups. Hence, the main management and treatment protocols for eczema include hydration and topical anti-inflammatory medications for flare-ups and related symptoms.

On the other hand, ancient botanical oils like Lavender and German Chamomile essential oils have been traditionally used in aromatherapy massage for their therapeutic properties to prevent skin diseases such as psoriasis, and eczema (Rai et al., 2020). Over the years, they have been used by people as a part of alternative medicine. Lavender essential oil is known to be rich in medicinal properties like antimicrobial activity, anxiolytic, anti-inflammatory and antioxidant properties. German chamomile due to its chamazulene ingredient has a strong anti-inflammatory and analgesic effect (pain relief). German chamomile strengthens the immune system (Lee et al., 2010; Rafii et al., 2020) which speeds up the process of wound healing. Utilization of herbal products like Lavender and German Chamomile essential oils benefit the eczema patients in many ways. Incorporation of these properties in the field of skincare has ample advantages which exhibit promising natural alternatives to the synthetic ones.

Hanna Ancient Multi Function Cream, also known as Hanna Cream, is a completely oil-based formulation that incorporates natural and sustainable components. It features active ingredients such as German Chamomile essential oil, Lavender essential oil and Vitamin E, along with supplementary ingredients including Shea Butter, Jojoba oil, Sweet Almond oil and Natural Beeswax. These natural elements provide significant advantages to the skin and offer exceptional moisturisation and effective skin repair and wound healing properties. Over the years, it has demonstrated effectiveness and gentleness on compromised skin, including eczema. The product has garnered positive feedback from consumers for its moisturising and reparative qualities.

In essence, for external use remedies the therapeutic action depends greatly on the delivery system of the active ingredients to the targeted area. Then, the percutaneous absorption of the active ingredients found in the essential oils closely related to the synergy action of the incorporated polyunsaturated vegetable oils. Shea butter, sweet almond oil and jojoba oil produces a strong occlusive effect that promotes absorption by increasing the degree of hydration of the epidermis and assisting penetration. The present study aimed to investigate the therapeutic effects in comparison to the over-the-counter topical cream for eczema and the possible mechanism of action on the delivery of active ingredients in the skin.

2. MATERIAL & METHODOLOGY

The materials and methods used are compliance to the local laboratory standard procedures.

2.1 Materials

Commercial cosmetic product Hanna Ancient Multi Function was purchased from its official online store at https://hanna.com.my/. Topical Xepa Hydrocortisone 1% Cream was available at the local pharmacy stores.

Fig. 1. (a) Hanna Ancient Multi Function Cream and (b) Topical Xepacort (Hydrocortisone 1%) Cream

2.2 Steroid analysis

The steroid analysis was conducted by testing, inspection and certification company SGS (Malaysia) Sdn. Bhd. The in-house method is in compliance with the ACM MAL 07, analysis performed by liquid chromatography mass spectrometer (LC-MS). Eight (8) references materials: Prednisone (CAS No: 53-03-2), Prednisolone (CAS No: 50-24-8), Flumethasone (CAS No: 2135-17-3), Dexamethasone (CAS No: 50-02-2), Hydrocortisone acetate (CAS No: 50-03-3), Betamethasone 17-valerate (CAS No: 2152-44-5), Beclomethasone dipropionate (CAS No: 5534-09-8) and Cortisone acetate (CAS No: 50-04-4) were used for the identification of steroid in Hanna Ancient Multi Function Cream.

2.3 Anti-inflammatory study

The anti-inflammatory study was designed to make a comparison of efficacy between Hanna Ancient Multi Function Cream and Topical Xepacort (Hydrocortisone 1 %) cream. The inflammatory properties were determined using the Biochemical and Enzymatic Assay: Nitric Oxide (NO) Scavenging Assay, at the Industrial Biotechnology Research Centre, SIRIM Berhad. NO is a reactive oxygen species (ROS) known to induce various inflammation—related conditions which include skin inflammation and allergic reaction. The assay is designed to screen the ability of the sample to reduce or inhibit the presence of NO, thus, substantiates whether the sample has anti-inflammatory property.

The assay was established based on a published method with a slight modification by Nakagawa and Yokozawa (2002). Two cream samples, Hanna Ancient Multi Function Cream and Xepacort (Hydrocortisone 1%) cream, were prepared prior to testing. For each sample, 100 mg (0.1 g) of cream was dispersed in 70% ethanol and vortexed/incubated for 5 minutes. The mixture was then centrifuged to remove insoluble impurities and the clear supernatant was collected for use in the assay. From this stock, a range of concentrations was prepared, with prepared concentrations from 3.125 to 100 mg/mL, corresponding to final tested concentrations of 0.78 to 25 mg/mL in the assay system. Ascorbic acid was used as a positive control to confirm the assay's validity. In a 96-well plate, the sample and positive control at various concentrations were each mixed in equal volumes with either phosphate buffer (pH 7.4) or sodium nitroprusside solution. The plate was then agitated at room temperature for 15 minutes. Afterward, Griess reagent was added to each well, and the nitric oxide levels were measured at 542 nm using a

microplate reader after a 5—minute incubation. The phosphate buffer served as the blank. The inhibition of NO production activity was determined at 542 nm using the equation below:

$$\%\ Inhibition = \frac{Ao - A1}{Ao} \times 100\%$$

where Ao is the absorbance of the control (no sample); Uninhibited $_{test}$ – Uninhibited $_{blank}$, $A1$ is the absorbance of the sample; Inhibited $_{test}$ – Inhibited $_{blank}$.

2.4 Particle size determination of Hanna Ancient Multi Function Cream

The particle size determination of Hanna Cream was conducted using a Zetasizer (Malvern instrument) located at Chemical Laboratory 1, Pagoh Campus Laboratory Management Center, UTHM Pagoh, Johor. The Zetasizer Nano series employs a technique called Dynamic Light Scattering (DLS) (also known as PCS - Photon Correlation Spectroscopy) for particle size measurement. This method assesses the correlation between Brownian motion and particle size by illuminating the particles with a laser and analysing the intensity fluctuations in the scattered light (Das et al., 2019).

Sample was prepared by dissolving 3 g of Hanna Cream in 30 mL of ultrapure water. The emulsion underwent ultrasonication at 100 % amplitude for 3 minutes. The colour and transparency of the solution was observed. Then, the sonicated solution was filtered with a 0.45 µm syringe membrane filter to obtain a clear solution. These sample preparation protocols align with the Zetasizer user's guidelines (Malvern Panalytical, n.d.).

The Z-average represents the intensity-weighted mean hydrodynamic size of a collection of particles assessed through Dynamic Light Scattering (DLS). This value is derived from a Cumulants analysis of the correlation curve, which assumes a singular particle size and employs a single exponential fit to the autocorrelation function (International Organization for Standardization [ISO], 2008). The parameters for manual measurement are detailed in Table 1.

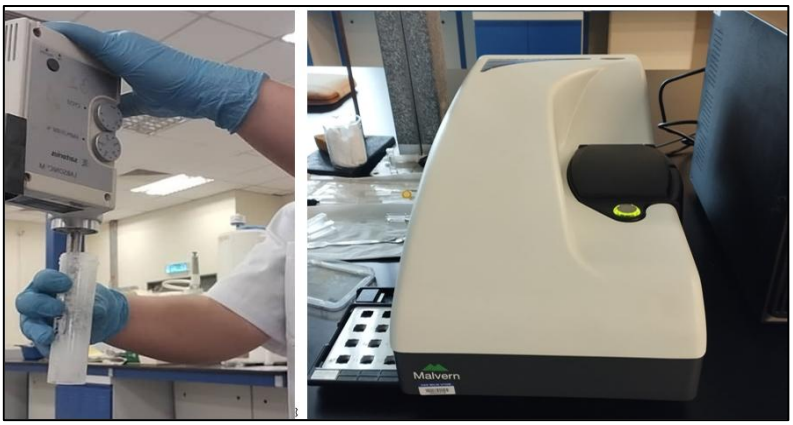

Fig. 2. (a) Ultrasonicate sample and (b) Malvern Zetasizer Nano Series

Table 1. Manual measurement setting of Hanna Cream size determination

Material Tab	
Material	Polystyrene latex
Material RI	1.590
Absorption	0.010
Dispersant Tab	
Dispersant	Water
Temperature	25.0 ℃
Viscosity	0.8872 cP
Dispersant RI	1.330
Temperature Tab	
Temperature	25.0 ℃
Equilibration time (seconds)	30
Cell type	
Cell type	Disposable cuvettes
Code	DTS0012
Measurement Tab	
Measurement angle	173°
Measurement duration	Automatic
Number of measurements	3

3. RESULTS

3.1 Steroid analysis

The steroid analysis report shows that Hanna Ancient Multi Function Cream is not detected for any steroid trace elements (Table 2). It is believed that the therapeutic benefits for eczema are driven by the synergistic interplay of its natural ingredients which collectively enhance anti-inflammatory, skin barrier repair and soothing actions to alleviate symptoms and promote wound healing.

3.2 Anti-inflammatory study

L-Ascorbic acid was used as a positive control. In this study, it demonstrated effective inhibition of nitric oxide production which confirm the integrity and reliability of the assay (Table 3). The concentration required to inhibit 50% of nitric oxide (lC_{50}) was within the acceptable range and the dose-response curve exhibited a strong correlation, with an R^2 value exceeding the recommended threshold. The half maximal inhibition concentration (IC_{50}) for Hanna Ancient Multi Function Cream was found to be 11.42 ± 0.44 mg/mL, demonstrating superior efficacy compared to Xepacort®, which did not reach 50% inhibition within the tested concentration range (Table 3). Based on the raw data collected (supplementary, S1) indicated that increasing concentrations of Hanna's cream enhanced its anti-inflammatory activity, while Xepacort® showed diminished effectiveness at its highest concentration (100 mg/mL; tested at 25 mg/mL), achieving only 25.0 ± 3.9% NO inhibition. In contrast, the second highest concentration of Xepacort® (50

mg/mL; tested at 12.5 mg/mL) yielded 42.4 ± 1.3% NO inhibition. Although the activity of Hanna Multi Function Cream is weaker compared to the positive control (IC_{50} 0.0569 ± 0.0009 mg/mL), its ability in removing excess NO from the environment, can theoretically break the cycle of inflammation and prevent tissue damage. The results preliminary validate that the formulation exhibits meaningful antioxidant, anti-inflammatory and cytoprotective effects.

Table 2. Steroid analysis report of Hanna Ancient Multi Function Cream.

Test Parameter(s):	**Unit**	**Test Method** (Analysis performed by LCMS)	**Result**	**MDL**
Prednisone (CAS No: 53-03-2)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Prednisolone (CAS No: 50-24-8)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Flumethasone (CAS No: 2135-17-3)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Dexamethasone (CAS No: 50-02-2)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Hydrocortisone acetate (CAS No: 50-03-3)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Betamethasone 17-valerate (CAS No: 2152-44-5)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Beclomethasone dipropionate (CAS No: 5534-09-8)	mg/kg	With reference to ACM MAL 07.	N.D.	10
Cortisone acetate (CAS No: 50-04-4)	mg/kg	With reference to ACM MAL 07.	N.D.	10

Note:
N.D. = not detected
MDL = method detection limit
mg/kg = ppm (0.1 wt% = 1000ppm)

Table 3. Anti-inflammatory comparison study, nitric oxide scavenging activity of l-ascorbic acid (positive control) and samples.

No.	**Sample**	**Half Maximal Inhibition Concentration (IC50) (mean ± standard deviation), mg/mL**	
		Prepared	**Tested (Final)]**
1	L-Ascorbic acid (positive control)	0.2277 ± 0.0037	0.0569 ± 0.0009
2	Hanna Ancient Multi-Function Cream	45.69 ± 1.74	11.42 ± 0.44
3	Xepacort (Hydrocortisone 1%) Cream	Not achieved	Not achieved

3.3 Particle size determination of Hanna Ancient Multi Function Cream

The analysis results are as shown in Fig. 3 (a), (b) and (c). The Z-average values indicate the sample particles sizes range from 170 to 175 d.nm. In comparison to the nanoparticle size range of 1 to 100 nm, it can be preliminarily concluded that Hanna Cream is classified as colloid rather than a nano cream. Nevertheless, the polydispersity index (Pdi) of the sample demonstrates favourable distribution values (0.264 – 0.320), which suggests that the particles within the sample are relatively uniform. The small particle size and uniform dispersity contribute to the cream's stability and spreadability. It is important to note that Pdi value close to 1 implies the sample has an extensive particle size distribution and may contain large particles or aggregates that could slowly sediment.

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name: Hanna Cream (W) 1
SOP Name: mansettings.nano
General Notes:

File Name:	test.dts	**Dispersant Name:**	Water
Record Number:	435	**Dispersant RI:**	1.330
Material RI:	1.59	**Viscosity (cP):**	0.8872
Material Absorbtion:	0.010	**Measurement Date and Time:**	Tuesday, 18 February, 2025...

System

Temperature (°C):	25.0	**Duration Used (s):**	60
Count Rate (kcps):	247.4	**Measurement Position (mm):**	1.25
Cell Description:	Disposable sizing cuvette	**Attenuator:**	6

Results

			Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm):	174.0	**Peak 1:**	220.2	96.3	134.2
PdI:	0.320	**Peak 2:**	4724	3.7	771.8
Intercept:	0.955	**Peak 3:**	0.000	0.0	0.000

Result quality Good

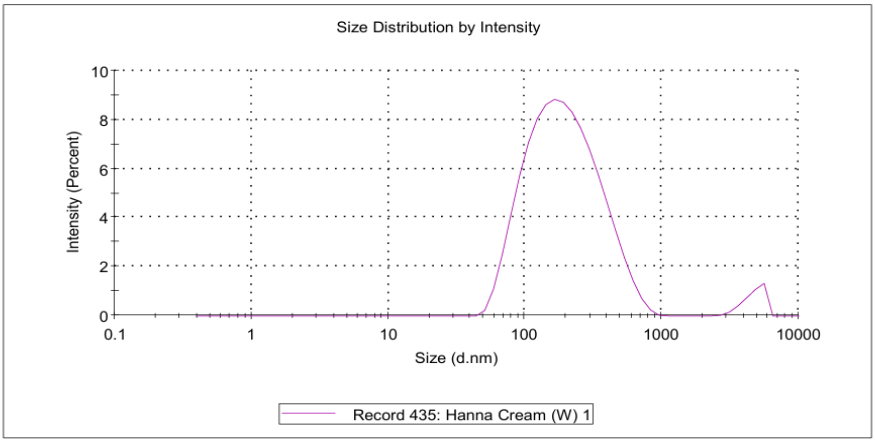

Fig. 3 (a). Particle size distribution of Hanna Ancient Multi-Function Cream, 1st replicate

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name: Hanna Cream (W) 2
SOP Name: mansettings.nano
General Notes:

File Name:	test.dts	**Dispersant Name:**	Water
Record Number:	436	**Dispersant RI:**	1.330
Material RI:	1.59	**Viscosity (cP):**	0.8872
Material Absorbtion:	0.010	**Measurement Date and Time:**	Tuesday, 18 February, 2025...

System

Temperature (°C):	25.0	**Duration Used (s):**	60
Count Rate (kcps):	247.7	**Measurement Position (mm):**	1.25
Cell Description:	Disposable sizing cuvette	**Attenuator:**	6

Results

			Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm):	170.1	**Peak 1:**	254.9	97.4	230.0
PdI:	0.308	**Peak 2:**	4552	2.6	848.9
Intercept:	0.957	**Peak 3:**	0.000	0.0	0.000
Result quality	Good				

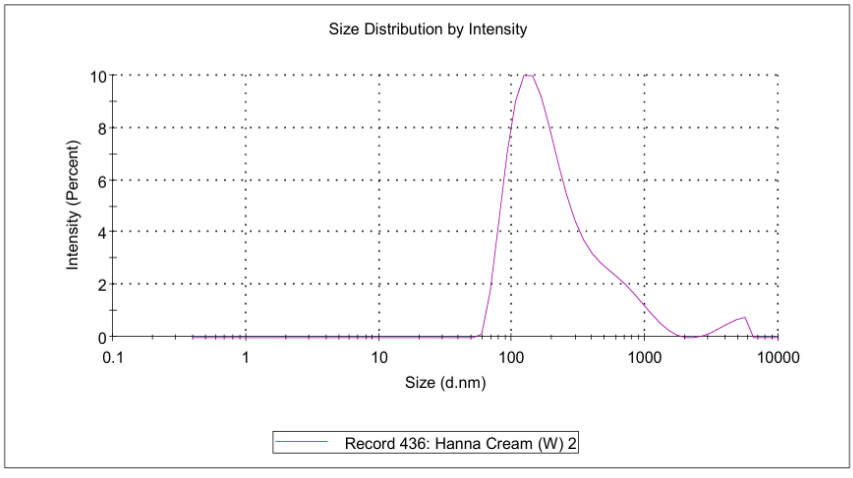

Fig. 3 (b). Particle size distribution of Hanna Ancient Multi-Function Cream, 2nd replicate

Size Distribution Report by Intensity

v2.2

Malvern

Sample Details

Sample Name: Hanna Cream (W) 3
SOP Name: mansettings.nano
General Notes:

File Name:	test.dts	**Dispersant Name:**	Water
Record Number:	437	**Dispersant RI:**	1.330
Material RI:	1.59	**Viscosity (cP):**	0.8872
Material Absorbtion:	0.010	**Measurement Date and Time:**	Tuesday, 18 February, 2025...

System

Temperature (°C):	25.1	**Duration Used (s):**	60
Count Rate (kcps):	246.5	**Measurement Position (mm):**	1.25
Cell Description:	Disposable sizing cuvette	**Attenuator:**	6

Results

			Size (d.n...	% Intensity:	St Dev (d.n...
Z-Average (d.nm):	171.7	**Peak 1:**	209.7	96.9	111.4
PdI:	0.264	**Peak 2:**	4649	3.1	807.7
Intercept:	0.954	**Peak 3:**	0.000	0.0	0.000
Result quality	Good				

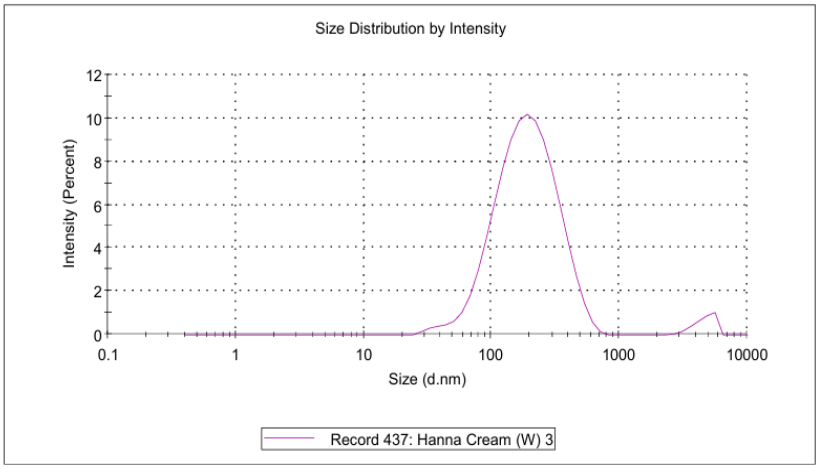

Fig. 3 (c). Particle size distribution of Hanna Ancient Multi-Function Cream, 3rd replicate

4. DISCUSSION

In general, topical corticosteroid creams are the first-line anti-inflammatory treatment for AD. Steroid analysis study of Hanna Cream indicates a steroid free cream formulation incorporating natural ingredients can offer therapeutic benefits for eczema through a synergistic effect, targeting multiple aspects of the condition. This synergy arises from the combined action of various natural compounds, each contributes to reducing inflammation, repairing the skin barrier, microbial balance and neuro-sensory modulation. The synergistic effects and therapeutic mechanisms are summarised in Table 4.

Preliminary anti-inflammatory study on Hanna Ancient Multi Function Cream in comparison to the over-the-counter topical steroid cream Xepacort® (hydrocortisone 1%) using Griess assay reveals that the natural oils in Hanna's formulation possess promising antioxidant power relevant to anti-inflammatory properties that complement corticosteroid compounds. The decline in performance at elevated doses of Xepacort® may be attributed to matrix interference and solubility challenges associated with high concentrations of the complex formulation. Meanwhile, studies focusing specifically on topical hydrocortisone have found that the parent compound itself is generally considered ineffective as a direct NO scavenger in in vitro assays. The improved performance of Hanna Multi Function Cream at elevated doses suggests its potential for skincare applications, owing to its simple formulation that mimics the skin. This property enhances absorption and facilitates the gradual release of its anti-inflammatory components. Based on these findings, the limitation of the Griess assay while acceptable as a preliminary screening tool is that it does not confirm true biological anti-inflammatory activity in living cells. Unlike hydrocortisone, which operates through a different mechanism of action. Although this early-stage chemical screen does not provide definitive proof of clinical efficacy, it can be hypothetically deduced that Hanna Cream manages inflammation primarily at the tissue level, whereas Xepacort acts at the cellular level. Therefore, in the context of eczema management, Hanna Cream may serve as a supplementary therapy alongside first-line topical steroid creams, potentially reducing patient reliance on steroid treatment.

Moreover, studies have shown that nanomaterials can enhance the efficacy of skincare products and serve as vital tools for wound healing (Hashimoto et al., 2023). Particle analysis conducted on Hanna Cream to assess its stability, quality and the presence of natural nanomaterials. Hence, it provided an overview on the formulation stability and bioactive ingredients delivery pathway. Particle size is known to influence the rate at which substances permeate and penetrate the skin. The skin serves as a porous barrier; with pores size varies based on the skin conditions. For instance, inflamed acne can exhibit pore sizes of up to 400 μm. Generally, skincare ingredients penetrate the skin via three primary pathways: the intracellular route (substances diffuse from cell to cell), the intercellular route (substances pass through the spaces between the corneocytes, and the lipid matrix, < 20 nm) and the transappendageal or transfollicular route (encompassing sweat gland pores, hair follicles and pilosebaceous pores, 60 to 80 μm).

Based on the particle size data of Hanna Cream, the cream particles are unlikely to penetrate the skin through the intercellular route, as the lipid matrix of the stratum corneum permits the passage of only small particles measuring less than 20 nm. However, the transfollicular route (ranging from 60 to 80 μm) is crucial for larger molecules and nanoparticles, as it offers a pathway through less densely packed stratum corneum structures (Salvioni et al., 2021; Raszewska-Famielec & Flieger, 2022; Pareek et al., 2025; Toren, 2025).

Table 4. Synergistic effects and therapeutic mechanisms of bioactives ingredients in Hanna Ancient Multi Function Cream.

Mechanisms	Synergistic Effects of Ingredients	Reference
Repairing the Skin's Physical Barrier: Filling Lipid Deficits ● The core pathology of eczema lies in defects in the stratum corneum's lipid bilayer structure, such as ceramide deficiency, leading to increased transepidermal water loss (TEWL). ● Replenishes essential fatty acids and rebuilds the lipid barrier as a result reduces water loss and blocks allergens.	Jojoba Oil Its wax ester structure (97-98%) forms a breathable protective film on the skin's surface, mimicking the function of the sebum membrane and blocking external irritants. Small molecular weight (≈600 Da), enabling it to carry active ingredients through the stratum corneum. Shea Butter High content of stearic acid (35-45%) and oleic acid (40-55%), enhancing adhesion between keratinocytes and reducing permeability. Sweet Almond Rich in oleic acid (40-60%) and linoleic acid (20-30%), with a ratio similar to human sebum, allowing it to penetrate the stratum corneum and fill lipid gaps, reducing transepidermal water loss (TEWL). Linoleic acid promotes ceramide synthesis, restoring the "brick-and-mortar" structure. Clinical studies indicated that topical formulations containing linoleic acid can reduce the Eczema Area and Severity Index (EASI) by 30%).	(Nasrollahi et al., 2018; Jones et al., 2020; Assaf et al., 2021; Gad et al., 2021; Melhaoui et al., 2021; Blaak & Staib, 2022; Abdel-Razek et al., 2023)
Suppressing Immune-Inflammatory Cascades: Regulating the Th2 Pathway ● Chronic inflammation in eczema is associated with an overactive Th2 immune response (excessive secretion of IL-4, IL-13, and IL-31). ● Suppresses key inflammatory factors which block the itch signals. Alleviates symptoms like redness, swelling and itching.	Lavender Essential Oil Linalool inhibits mast cell degranulation, reducing histamine release. Recent study on lavender essential oil and its main components linalool and linalyl acetate showed effectiveness against Imiquimod induced psoriasis in mice. German Chamomile Essential Oil Active ingredients α-bisabolol and chamazulene. Inhibit the NF-κB inflammatory signaling pathway, reducing TNF-α and IL-6 release. Block histamine H1 receptors, alleviating itching.	(Lee et al., 2010; Cardia et al., 2018; Saghahazrati et al., 2019; Rai et al., 2020; Beck et al., 2022; Kozuharova et al., 2023; Lugović-Mihić et al., 2023)
Modulating Neurogenic Itching: Breaking the "Itch-Scratch" Cycle ● Eczema-related itching involves activation of TRPV1 receptors in nerve endings and the release of neuropeptides. ● Inhibits itch receptor activation and reduces neural sensitivity. Hence, minimises secondary barrier damage caused by scratching.	Sweet Almond Oil Linoleic acid metabolite which is arachidonoylethanolamide (AEA), also known as anandamide activates cannabinoid receptors. AEA is a partial agonist CB 1 and 2 receptors, suppressing sensory neuron excitability. Lavender Essential Oil Linalool inhibits TRPA1/TRPV1 channels. This inhibition of TRPA1 by linalool resulted in reduced pain perception and potentially other therapeutic effects.	(Turcotte et al., 2015; Yosipovitch et al., 2018; Nakagawa & Yokozawa, 2002; Vakirlis et al., 2024)

Preliminary estimates suggest that Hanna Cream particles are approximately 400 times smaller than the diameter of hair follicle pores, allowing them to accumulate within follicles and reach deeper skin layers.

To substantiate this claim, permeation and penetration studies are recommended. Owing to its lipophilic nature, being entirely oil-based, Hanna Cream may facilitate the partitioning of particles into the lipid-rich matrix, enabling slow diffusion through cells while simultaneously forming a protective layer on the skin. The particle size and lipid affinity of Hanna Cream further contribute to its emollient and occlusive properties.

5. CONCLUSION

The Griess assays study on anti-inflammatory properties of Hanna Ancient Multi Function Cream, compared with the over-the-counter topical steroid cream Xepacort® (hydrocortisone 1%), suggests that the natural oils present in Hanna's formulation exhibit greater antioxidant efficacy which contribute to anti-inflammatory action than corticosteroid compounds, which are not direct nitric oxide (NO) scavengers. The enhanced performance observed at higher doses of Hanna Multi Function Cream indicates its potential application in skincare, which can be attributed to its simple formulation that closely mimics the skin, thereby improving absorption and facilitating a gradual release of its anti-inflammatory properties. Although this early-stage chemical screen does not provide definitive proof of clinical efficacy, these preliminary findings allow for the hypothetical deduction that Hanna Cream manages inflammation primarily at the tissue level, whereas Xepacort acts at the cellular level. Therefore, in the management of AD, Hanna Cream may serve as a supplementary therapy alongside first-line topical steroid creams, potentially reducing user reliance on steroid treatment. Research has shown that nanomaterials can significantly enhance the effectiveness of skincare products and play a crucial role in wound healing. The particle analysis conducted on Hanna Cream has provided valuable insights into the stability of the formulation and the delivery mechanisms of its bioactive ingredients. It is believed that the particles in Hanna Cream are 400 times smaller than the diameter of hair follicle pores, allowing them to accumulate within hair follicles and penetrate deeper layers of the skin. The lipophilic nature of Hanna Cream, being entirely oil-based, has improved the distribution of particles within the lipid-rich matrix, enabling gradual diffusion through cells while simultaneously forming a protective barrier on the skin. Although Hanna Ancient Multi Function Cream is not categorized as a nano cream, it has been designed and formulated for multiple purposes. It has proven to be effective and gentle on compromised skin, including conditions such as eczema. The product has received positive reviews from consumers for its moisturising and reparative properties. Additionally, its particle size data further supports its safety regarding penetration, absorption, stability, and uniform dispersity, thereby confirming its quality. Hanna Ancient Multi Function Cream genuinely lives up to its multifunctional promise.

ACKNOWLEDGEMENTS

We thank the Universiti Tun Hussein Onn Malaysia and SIRIM Malaysia. This work was financially supported by Maxconnection Sdn. Bhd. and Gracemedic Sdn. Bhd.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflicts of interest.

AUTHORS' CONTRIBUTIONS

Celine Lee Xin Yi & Lim Kai Ling: Data analysis, Methodology, Formal analysis, Writing–original draft. **Tan Kian Meng**: Visualization, Methodology, Writing – review & editing. **Aisyah Rehan**: Visualization, Resources, Draft corrections.

DECLARATION OF GENERATIVE AI IN THE WRITING PROCESS

During the preparation of this work, the authors used ChatGPT (OpenAI) and DeepSeek solely for language refinement and improvement of manuscript readability. The authors reviewed and edited all generated content and took full responsibility for the content of this publication.

ETHICS STATEMENT

The authors declare that this research did not involve human or animal subjects. All experimental procedures were performed following the institutional Occupational Safety and Health (OSH) protocols of Universiti Tun Hussein Onn Malaysia (UTHM) and SIRIM.

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