Case Report

Propolis Tincture and Propolis Cream as Therapeutic Agents for Venous Stasis Dermatitis

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Abstract: Venous stasis dermatitis (VSD) or varicose eczema is a chronic inflammatory skin condition caused by chronic venous insufficiency in the lower extremities due to retrograde venous blood flow and hypertension. The current report describes the outcome experience by 78-year-old subject who achieved complete recovery after suffering from VSD for more than 19 years. The subject was on 4-months oral administration of propolis tincture and topical application of propolis cream developed by Nature's Laboratory Ltd. company, Whitby, UK under the brand BeeVital®. Propolis is a resinous material collected by bees from various plant exudates to shield their colony health and integrity. Propolis possesses anti-inflammatory, and wound healing properties which contributed to its therapeutic outcomes.

Keywords: venous stasis dermatitis; varicose veins; propolis; BeeVital® Propolis

1. Introduction

Varicose veins (VV) are dilated, enlarged blood vessels that appear just underneath the skin, primarily in the lower extremities. VV developed when veins walls weaken and their valves malfunction, causing blood backs up in veins and consequently, lead to blue and purple bulges on legs, feet, or ankles. Although, VV can arise in any superficial vein they most frequently occur in the leg's veins. Any condition that puts extreme pressure on the legs or abdomen such as pregnancy, obesity, standing for extended periods and ageing can lead to VV [1]. Persistent pressure may lead to legs swelling, especially around the ankles, and may cause fluid leakage into surrounding tissues initiating discolouration and inflammation which can progress to varicose eczema or gravitational dermatitis.

Propolis is a resinous material collected by bees from plant exudates to maintain hive homeostasis and colony health [2]. It supports the antioxidant status and detoxification responses of the bees against environmental stressors such as pesticides and aflatoxins [3]. Propolis contains over 500 chemical constituents including flavonoids, phenolic compounds, polyphenols, terpenes, terpenoids, coumarins, steroids, amino acids, and aromatic acids have been reported from propolis which contribute to its broad therapeutic potential [4]. It is antioxidant and anti-inflammatory properties have been effective for treating the skin related issues such as wounds, and burns [5,6]. This brief study discusses the recovery of 78-year-old subject who suffered from venous stasis dermatitis (VSD) derived from venous insufficiency for 19 years. This revival occurred after ingestion of propolis tincture and topical application of propolis cream formulations for the duration of four months. The formulations were developed and supplied by Nature's laboratory, Whitby, UK branded as BeeVital®.

2. Development of the Disease and Early Treatments Interventions

In 2005, the subject experienced VSD issue on the left leg accompanied by intense pain and inflammation. The subject underwent sclerotherapy, a procedure involving injection of solution into the vein to induce scarring to redirecting blood through healthier veins therefore reducing the appearance of distorted veins [7]. However, this intervention did not resolve the VV issue. Instead, the subject's left leg developed traumatic bleeding, scaling

necessitating hospitalization for few days (Figure 1). The subject continued to suffer from pain, swelling around the lesions, and inflammation.

Figure 1. Bleeding and scaling of the skin of the subject's left leg observed for the first time in 2005 as reported by subject.

3. Disease Progression

As the time passed, within 8–9 months, the subject progressively developed the characteristic symptoms of VSD including scaling, erythema, and xerosis of the skin. Additional signs were pruritus localized to the medial ankle pain, lesioned inflammation, skin colour changes and thickening (Figure 2).

Figure 2. Progression of the scaling, and inflammation on the subject's left leg.

The subject declined the steroidal treatment due to concerns about their side effects and continued to experience scaling and bleeding on the left leg for several years.

4. Medical Interventions from 2015–2016

In the year 2015, the subject was admitted to accidental and emergency unit once again due to traumatic bleeding. The subject's left leg was bandaged prior to discharge.

A year later in 2016, the consultant observed an infection in the subject's left leg; however, no treatment was provided at that time. Subsequently, the subject underwent sclerotherapy again which resulted in extreme pain, bruising, swelling, and traumatic discomfort. Owing to dissatisfaction with steroidal cream treatment, the subject applied Zerobase® emollient cream to moisturize the dry skin.

5. Propolis Tincture and Propolis Cream Application

In the year 2023, subject began using BeeVital® propolis products, named Propolis cream, and Propolis tincture supplied by Nature's Laboratory Ltd. (Whitby, North Yorkshire, UK). The formulations were prepared using a standardized commercial propolis rather than a single geographically defined raw propolis source. Standardization of the raw propolis was performed according to consistency in polyphenolic composition and compliance with internal quality measures established by the manufacturer.

According to supplier's analytical data and published literature, the standardized propolis contains distinct constituents such as flavonoids, phenolic acids, and caffeic acid phenethyl ester (CAPE) which are known for their anti-inflammation and antioxidant properties [8,9]. The BeeVital® propolis tincture is an ethanolic extract of propolis designed for oral administration, while the propolis cream is formulated for topical application.

Chemical analysis of BeeVital® products and comparable propolis samples have confirmed the presence of key bioactive constituents, including flavonoids (such as galangin), phenolic acids (such as caffeic acid), and CAPE [8,9]. Ethanolic extraction was used in the tincture formulation to efficiently solubilize polyphenolic compounds and flavonoids, thereby facilitating systemic bioavailability following oral administration [3,10]. On the other hand, the topical propolis cream enables localized delivery of propolis's actives to the skin to exert anti-inflammatory, antioxidant, and antimicrobial effects against skin conditions such as chronic inflammations and wounds [5,11].

From April 2023, the subject started oral administration of BeeVital® propolis tincture at a dose of five drops twice a day in water alongside with topical application of BeeVital® propolis cream to the affected areas. By September 2023, the subject observed noticeable improvements in the left leg including reduced scaling, diminished scarring with no bleeding noticed in the last 4–5 months (Figure 3). This is when the subject shared the complete case history and pictures evidence. Being available locally it was easy to follow up and find out the progress.

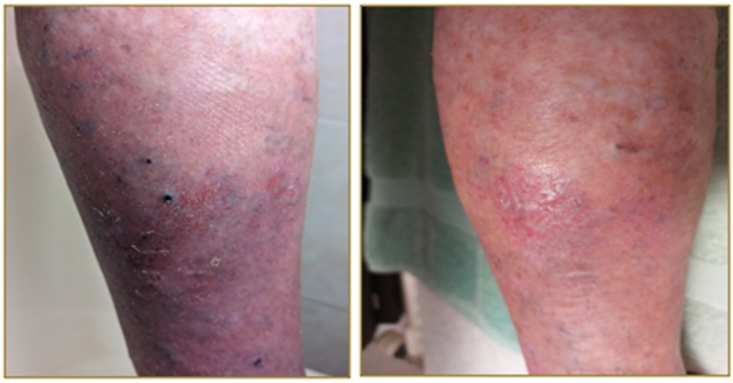

Figure 3. Healing progression steps following ingestion of BeeVital® propolis tincture and application of BeeVital® propolis cream.

Chronic inflammatory response plays a critical role in the observed cutaneous events associated with VSD [6]. Such inflammation is primarily triggered by high pressure in the affected veins causing leakage of leukocytes through their endothelial cells into nearby tissues. This leucocytes infiltration led to the release of inflammatory mediators such as protein kinase C (PKC). This inflammatory response is eternized by activation of nuclear factor kappa B (NF-κB), which triggers the expression of various proinflammatory agents, such as inducible nitric oxide synthase (ins), cyclooxygenase 2 (COX-2) as well as inflammatory cytokines, such as Interleukin- (1,2,6 and 8) and Tumour necrosis factor alpha (TNF-α) [12]. In addition, the elevated venous pressure in VSD encourages the accumulation of local immune cells such as T-cells and macrophages which further sustaining the inflammatory status [6]. The exaggerated chronic inflammatory response in VSD is often associated with oxidative stress and generation of free radicals in the skin, which can induce a long-lasting wound and cause excessive scarring [13,14].

Propolis is a beehive product with an abundance of constituents mainly phenolic acids, flavonoids and their esters [8,9]. Propolis actives can inhibit the release of pro-inflammatory cytokines and other mediators that contribute to inflammation [10]. Its anti-inflammatory potential is through multiple mechanisms including hindering the gene expression and activities of lipoxygenases and cyclooxygenase (COX) enzymes thereby reducing the prostaglandins and leukotrienes synthesis [15]. Additionally, propolis compounds such as CAPE and other polyphenols are reported to inhibit the NF-κB pathway which is a key transcription factor in regulating the expression of pro-inflammatory genes expression [16]. By inhibiting NF-κB activation, propolis may reduce the production of pro-inflammatory cytokines and chemokines mitigating inflammation in VSD.

Compounds such as quercetin, kaempferol, galangin and chrysin which are found in propolis have been identified as the major inhibitors of nitric oxide; an essential inflammatory mediator generated by iNOS pathway [10]. Additionally, propolis is rich in antioxidants which can reduce the levels of reactive oxygen species (ROS) therefore attenuating the activation of inflammatory pathways in the skin [10]. Through reducing ROS levels, propolis mitigates inflammation at the cellular level. Furthermore, propolis has been reported to inhibit the chemotaxis of human polymorphonuclear leukocytes (PMNs), which are related to the aggravation of inflammatory responses [11].

Mitogen-activated protein Kinases (MAPKs) are key intracellular signalling proteins that regulate inflammatory responses. Propolis components such as quercetin, apigenin, kaempferol and luteolin have demonstrated the ability to modulate the activity of MAPKs. This modulation can affect the production of inflammatory mediators therefore contributing to the anti-inflammatory properties of propolis [17]. Encompassing this mechanism additionally explains how propolis alleviates chronic inflammation in conditions like VSD by triggering numerous pathways included in inflammation.

The anti-inflammatory pathways discussed in this brief study are based on hypotheses in align with pervious investigations but lack direct evidence from this case. Future investigations should focus on in vitro and in vivo studies to validate the suggested anti-inflammatory mechanisms of propolis. Additionally, robust clinical trials are essential to affirm the efficacy and safety of propolis in managing VSD.

6. Conclusions

In conclusion, as inflammation can play a critical role through VSD pathogenesis, innovative natural substances such as propolis which modulates several inflammatory pathways could be a promising new generation therapy for VSD. In the current brief study, BeeVital® Propolis tincture and Propolis cream demonstrated efficacy as potential adjunctive treatments for VSD.

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Institutional Review Board Statement: Not applicable.

Informed Consent Statement: In this study, no method requiring the permission of the "Ethics Committee" was used as it was only involved a single case with no intervention in the standard care received by the patient. However, consent form was obtained from the subject for publication of clinical photographs and health condition information. The case consent form is available upon request.

Data Availability Statement: All data generated or analyzed during this study are included in this published article.

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Conflicts of Interest: The formulations are developed and supplied by Nature's laboratory branded as BeeVital®, Whitby UK based company. Despite of that, the authors confirm that there are no known conflicts of interest.

Use of AI and AI-Assisted Technologies: No AI tools were utilized for this paper.

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