

Maskwio'mi (Birch Bark Extract): A Case Study Exploring The Use Of A Traditional L'nu Medicine On Skin Conditions

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Introduction

According to the Canadian Dermatology Association (2024), more than 1 in 4 Canadians live with chronic skin conditions such as eczema, psoriasis, acne and atypical dermatitis.¹ There are many different treatment options, including prescription medications,² over-the-counter drugs, natural remedies and herbal folk medicines.^{3,4} Folk medicines have a long history, and birch trees (genus *betula*) have shown great utility for treating skin conditions in societies of temperate and boreal climate zones^{5,6} and have been listed in pharmacopoeias published in many different languages for several centuries.^{7,8} Each natural health product (NHP) is identified by species, part of species and processing method either under NHP or cosmetic regulation. Currently, there are more than 60 birch species known,⁹ with different methods of obtaining birch extracts from various parts of these trees, including from the bark, root and leaves.⁵ However, commonly used terms such as 'birch extract', 'birch oil' or 'birch bark oil' often

complicate accurate assessments as the chemical composition, and thus medicinal modes of actions can vary greatly.⁵ Despite the wealth of knowledge of birch extract treatments, understanding is not comprehensive as some traditional Indigenous folk medicines utilizing birch have been under-reported.

Maskwio'mi

Maskwio'mi (maskwi = birch, o'mi = gathering or oil) is such a traditional skin remedy from the L'nu (Mi'kmaq) people of Atlantic Canada that was almost forgotten.¹⁰ *Maskwio'mi* is prepared traditionally by a pyrolytic process using a 'can-over-can' fire method with the outer bark of *betula papyrifera*, commonly known as paper birch.^{10,11} The bark is thermally broken down in a low oxygen environment inside a metal container and a viscous oil (*maskwio'mi*) drips out at the bottom of a perforated container into a receptacle can. This oil is the concentrated form of the extract and subsequently co-formulated into creams or



soaps in concentrations of 1 wt% (weight percentage) to 15 wt%. Stories of L'nu state that the traditional cream base was bear grease or goose fat. Maskwio'mi is a complex organic matrix consisting of over 200 chemical compounds. It is safe for topical treatment, due to trace amounts of cresols,¹¹ and has shown in vitro broad-spectrum antibiotic properties.¹²

The Maskwiomin™ company mimics the traditional fire method with a proprietary, electric extractor equipment producing the bark extract more consistently and in larger quantities. Maskwio'mi falls into the International Nomenclature Cosmetic Ingredient (INCI) category of *betula papyrifera* bark extract.¹³ Maskwio'mi products are sold under the brand name Maskwiomin™ in Canada and the US under

'cosmetic' regulations, as there is no equivalent NHP entry.

Case studies in health research are significant as they provide evidence related to context and a medium for understanding the complexity of how, where and why interventions have their observed effects.¹⁴ This case is part of a larger study and the first to document usage of maskwio'mi for skin conditions, with a goal of future in-depth clinical studies and hopes of recognizing it as an NHP.

Client/Patient Characteristics

MC is a 41-year-old male who reported living with skin issues for most of his life. MC received various diagnoses from physicians and dermatologists, including acne, seborrheic dermatitis and

eczema. MC described his skin as, “red, itchy, dry, and hot” (July 2023), affecting mostly his face and neck area. He also experienced “breakouts” on his torso (chest, back) and fingertips. His skin condition and symptoms were worsened by exposure to the sun. He was unable to use sunscreen as it triggered the skin symptoms and “set off a whole other set of skin issues” (August 2023). Further, MC described having patches of skin discoloration on his back and chest. A dermatologist diagnosed these spots as seborrheic dermatitis. MC described the dermatitis as presenting “differently on certain areas of his body.” At times, “it would be red and flaky on the neck, face and eyelids but be darkened or lightened spots on my back and chest” (August 2023).

Data Collection

Data for this case study was collected with the permission of MC. He read and discussed the Letter of Information and granted his Informed Consent. MC engaged in two interviews for this case study report. In addition, he offered and provided photographic images of his skin health progression. Interviews were conducted via phone at MC’s request and a non-directive approach to data collection was used. The interview started with a single open-ended question; “Can you share with me your experience of using maskwio’mi?”. Additional questions or prompts were used at the end of the story to clarify incidents. The second interview was completed to provide MC with an opportunity to further clarify his statements and his progress regarding his use of maskwio’mi for his skin conditions. A case study emerged and is presented herein.

Examination/History

MC’s earliest experience of consulting a physician for a skin condition was as a teenager (approximately 1997). At this time, MC was prescribed isotretinoin (Accutane™) which he referred to as, “the intense stuff”, to treat acne. As an adult, he developed red rashes that were diagnosed by a dermatologist as eczema. MC was prescribed a variety of creams and ointments over the years. The most recent prescription from a

dermatologist in 2020 was Protopic™/tacrolimus ointment 0.03% to be applied to his face twice daily. MC stated that this treatment never helped. Over the years with lack of skin improvements, MC tried multiple skin creams in an attempt to alleviate his skin conditions. If he had success, it was short-lived, only lasting a few days. He explained, “There is side effects [to the skin treatments] of dry skin. I felt like I could not win.” (August 2023).



Figure 1: Red and itchy skin status before trialling Maskwiomin (May 2019 & Dec 2021).

MC had little success as his skin would only temporarily heal. He explained, “I tried a library of different creams, night creams, exfoliating cleansers in the past. Some would work for a little while then stop working.” (July 2023). He further stated, “I had been seeing dermatologists my whole life and I was getting desperate and I was fed up.” (July 2023). Figure 1 shows example of redness and soreness of skin of MC’s lower neck. MC stated, “After years of trying different things [creams and ointments], I heard about Maskwiomin and haven’t looked back.” (March 2024).

MC shared his thoughts upon reviewing earlier images of his skin which display the persistent rash on his neck, face and right eyelid. He stated:

“It was crazy finding the before photo because it brought me back and it was a dark emotional time. It was all over my neck and there was a couple of weeks where I was very self-conscious, and I would try to hide my neck with clothing during interactions in public and in meetings. I would intentionally put my hands on my neck to hide the spots. It was tough to hide my skin, as this was before the pandemic and mask wearing. I was hyper-aware and self-conscious of my skin and was a little depressed over it. I felt like my

skin was just going to continue to get worse. It would start at my temples, spread to my eye and to my neck. I was really low emotionally, had low self-confidence and low self-esteem.” (Aug 2023).

Use Of Maskwiomin For Skin Conditions

MC became aware of the usefulness of Maskwiomin for the treatment of skin conditions via a friend’s recommendation. He ordered a sample pack containing birch bark extract ointment (extra strength), cream and soap.¹⁵ MC states, “I started using the cream as a moisturizer and the concentrated stuff (ointment) for flare ups.” (July 2023). He used the cream twice per day, in the morning and in the night, after washing his face with an over-the-counter skin cleanser. He described applying a very small amount of maskwio’mi ointment on the tip of his finger to the irritated skin areas. He also stopped using all other skin products to determine the benefit of Maskwiomin. MC shared: “The skin rash was the worst part on my face. It [Maskwiomin] cured it. It’s gone. I have no red spots on my face now.” (July 2023).

When asked how long it took to see an improvement, MC replied, “Two days after using it, I saw a difference.” He continued, “As I am getting older, I have random skin tags or miscoloured patches on my skin. I had two strange patches of skin, and I tried it on those spots. It worked. The brown spots were gone and it isn’t coming back!

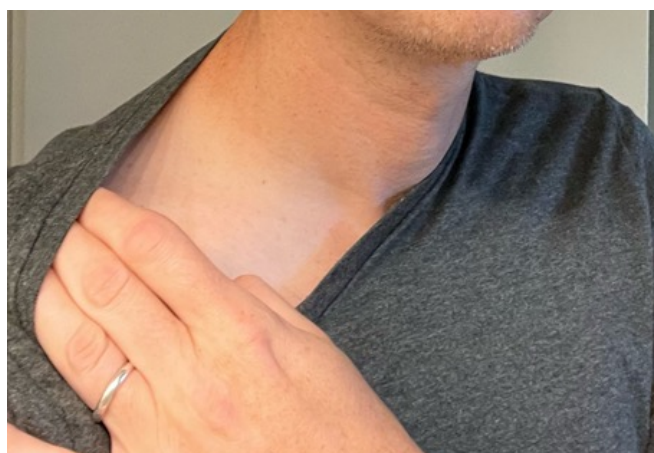


Figure 2: Eighteen months with much improved skin after treatment with Maskwiomin (August 2022).

It is now a cure all for my skin conditions.” (July 2023).

MC explained that he used the cream as a daily moisturizer for several months and then was able to stop when his skin was consistently clear. Provided photos show clear and irritation-free skin of the neck after using maskwio’mi (See Figure 2).

“Now I use the ointment for spot treatment when I have a flare up,” he notes. “I experiment and when I see a dark spot. I will try it and see if it works and it usually does lighten it or clear it” (July 2023).

MC reported that the improvement in his skin condition had a positive effect on his self-esteem and self-confidence. He stated:

“The change in me is amazing. I don’t think about my skin anymore. It is the first time in my entire life and now I think I take it for granted. Now I go weeks without using Maskwiomin but a few weeks ago, around my eye got dry and so I started putting it on as needed. I know it’s going to work so I don’t worry about it anymore. I feel like I now have normal skin problems. It is truly amazing. I definitely am feeling more confident now.” (August 2023.)

Overall, MC reported an extreme improvement in his skin conditions. Another benefit he shared, “I’ve had one small ointment container for months and months because you only need to apply a small amount. Others should know that you only need to use a small amount” (July 2023).

Discussion

In two interviews and through images, MC shared his experiences with maskwio’mi for the treatment of chronic skin conditions that were diagnosed by a dermatologist as seborrheic dermatitis, eczema and acne. As he experienced skin problems for much of his life and was unsuccessful in finding an effective and sustainable treatment, he was encouraged to use maskwio’mi to clear his skin. He reported an extreme improvement in his skin conditions within a few days of trying the product. The redness, itching and dry skin was improved significantly following two days and completely healed within a couple

of months. Having clear skin, he identified an improvement in his self-esteem and self-confidence. As only a small (i.e., fingertip) application of ointment is needed for treatment, MC viewed this as another benefit to using the product, implying low cost of the treatment.

In March 2024, MC was asked, “Has your skin condition changed in its presentation or symptoms?” He responded, “It’s honestly the best it’s ever been. One of my oldest friends mentioned just last week how good my skin looked and I was over the moon.”

At present, MC is no longer required to use Maskwiomin daily. He stated he now feels, “completely cleared up of all my long-standing skin issues...I haven’t had even a hint of a flare up or red spot on my skin since treating it with Maskwiomin.”

This case study is the first formal dissemination of the impact of maskwio’mi on skin issues and it is a part of a larger CIHR project to study this product. The project is led by Matthias Bierenstiel, a chemist, and Tuma Young, L’nu and ethnobotanist and lawyer, who ‘rescued’ the knowledge of maskwio’mi in the 1990s. The project is founded on *eptuaptmumk* (Two-eyed Seeing),¹⁶ balancing science and Indigenous knowledge and working with the local L’nu community.

There have been numerous anecdotal stories about a variety of skin conditions, with people reporting that “maskwio’mi works.” The research team is in the early stages of determining the exact mode of actions. We hypothesize that it is not one single chemical compound within the bark extract that is responsible for alleviating the variety of skin symptoms. Chemical analysis has shown that the extract contains over 200 chemical compounds.¹¹ We maintain that it is this multitude of pharmaceutically active compounds that generate the skin improvement. Essentially, we believe that there is a symphony of compounds working together to improve skin issues. We have found antibacterial properties in the extract¹² and have indication and preliminary in vitro results regarding anti-itch, anti-inflammatory and cell-growth promotion properties. It is this combination that is likely to assist with alleviating

skin issues.

Skin conditions are highly complex and while one underlying condition causes irritation subsequent interactions will cause complications. For example, the skin may feel itchy and scratching the area creates a break in the skin, causing a secondary bacterial infection, inflammation and pain. Thus, a multitude of compounds in a topical cream can address these different symptoms and reduce their respective and different impacts, allowing for initiation and progression of the skin healing process. The extract is also highly hydrophobic and thus very lipophilic so that the pharmaceutically active compounds can readily penetrate the skin layers. This approach of multi-component treatments is in alignment with the L’nu view of holistic medicine and in contrast to the single compound treatment approach dominant in current medicine.

Bierenstiel and Young have been working with the local L’nu community to demonstrate and share this knowledge with L’nu members in an effort to keep these important traditions alive. However, making the maskwio’mi bark extract is laborious and there was a demand for the products. Bierenstiel and Young consulted with the local community of Membertou First Nation, Sydney, Nova Scotia and were given support to commercialize in an ethical way. This is how maskwio’mi products are now available in the market through the Maskwiomin company.

Clinical Implications

It is important to continue research into the use of traditional L’nu knowledge for skin conditions. This L’nu knowledge of maskwio’mi will be used towards future research related to the potential reformulation and commercialization of maskwio’mi for present day use as a natural healing ointment in the treatment of various skin conditions.

The team acknowledged that they need to develop a ‘How to Use’ tool for users. The tool will be used to increase knowledge related to how birch bark extract (in its various forms of soap and cream) is used by individuals, for what conditions and the general healing experience.

There is a need to enhance Indigenous community engagement to co-create knowledge.¹⁶ This process will be guided by 'Two-eyed Seeing' as it is central to the whole of a co-learning journey. People familiar with both Western and Indigenous knowledge systems can share their knowledge of maskwio'mi use to augment treatment benefits.

Lessons learned have resulted in Maskwiomin adjusting the user directions to indicate use twice a day, or as needed, and to apply product to affected skin area.

Summary

This study is a part of a larger, five-year multi-phase research project to explore the uses of maskwio'mi (birch bark extract) for the treatment of skin conditions. This case study was used to develop an in-depth understanding of a person's thoughts and actions in treating their skin conditions using Maskwiomin.^{17,18} MC excitedly stated, "I finally found something that works!" (July 2023). It is suggested in the literature that birch bark is the first medical plant with a high potential to improve wound healing.¹⁹ The participant in this case study identified birch bark extract as a successful treatment for his skin conditions, supporting the fact that the medicinal plant can be used for treating skin conditions. There is a need for further systematic approaches to gather knowledge of maskwio'mi use in treating skin conditions.

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Conflict of Interest

Tuma Young and Matthias Bierenstiel acknow-

ledge a competing financial interest in Maskwiomin™, a company that produces and sells maskwio'mi skincare products. This company could potentially benefit from the findings of this research. All other authors declare there are no known competing financial interests.

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