

A Sweet Solution: The Use of Medical-grade Honey on Oral Mucositis in the Pediatric Oncology Patient

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Abstract: *Introduction.* Pediatric patients develop mucositis when receiving treatments such as chemotherapy and radiation; the most common and sensitive is oral mucositis. Mouth rinses containing antimicrobial, antihistamine, and analgesic medications are the mainstay for pediatric patients; however, patients often refuse these rinses due to the taste or texture. Also, patients under 1 year of age are unable to use these products. *Objective.* Herein, the improvement of oral mucositis with standard oral care and additional use of active Leptospermum honey in pediatric oncology patients after chemotherapy is demonstrated. *Materials and Methods.* Patients received oral care every 4 hours followed by application of the honey paste 3 times daily. The honey paste was applied with a sponge swab to coat the mouth. Patients either swished and spit or had excess honey suctioned out. At completion of this evaluation, the honey treatment was used in 10 pediatric oncology patients between the ages of 9 months and 17 years. *Results.* The Leptospermum honey paste was easy to apply and was well received by all patients. Healing was observed within 3 days, and patients in all cases reported decreases in pain. Decreased wounds and bleeding were evident in all cases within 5 days. *Conclusions.* Leptospermum honey paste proved to be effective in all participating patients.

Key words: pediatric, oncology, honey, oral mucositis

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Pediatric patients develop mucositis when receiving treatments such as chemotherapy and radiation. The gastrointestinal mucosa's epithelial cells divide quickly, which leads to breakdown and painful ulceration. Oral mucositis is the most common form, in which patients develop painful bleeding ulcerations and thick mucoïd saliva, and the lips eventually will crack and bleed.¹ Mouth rinses containing antimicrobial, antihistamine, and analgesic medications are the mainstay for pediatric patients, but they are often rejected due to the taste or texture. In addition, patients under 1 year of age are unable to use these products. Since continued oral mucositis leads to increased pain and inability to eat, an alternative to the standard treatments is needed.¹ The objective of this study is to improve oral comfort and improve nourishment in the pediatric oncology patient.

Materials and Methods

Patients were chosen based on the presence of oral mucositis after chemo-



Figure 1. Leptospermum honey paste was applied to coat the entire mouth after oral care 3 times daily with a sponge swab about every 4 hours.

therapy. There were no exclusions related to age or type of cancer. Leptospermum honey paste (MEDIHONEY Paste; Integra LifeScience Corporation, Plainsboro, NJ) was applied to coat the entire mouth after oral care 3 times daily with a sponge swab about every 4 hours (Figure 1). Oral care for patients was dependent on age and physical ability. Patients used prepackaged oral care kits with assistance or rinsed their mouths with potable water. Depending on the patient's age and physical ability, the patient either swished and spit or had excess honey paste suctioned out. Application process was age dependent; infants and patients of higher acuity required more assistance.

Results

Overall, 10 patients were observed; many preferred the honey paste and would request its use. Patients that opted to return to standard treatment did so after resolution of oral mucositis and made this decision due to the texture of the paste. The Leptospermum honey paste was found to be easy to apply, well-received, and an effective alternative for oral mucositis.

Case 1. A 17-year-old oncology patient with acute lymphoblastic leukemia (ALL) developed oral mucositis after chemotherapy. The patient presented to the pediatric intensive care unit with oral mucositis; a wound care nurse consult was requested for treatment. The lips were crusted black with dried blood, and there were large ulcers on the tongue, gums, and inner cheeks (Figure 2A). The patient refused standard oral care, so Leptospermum honey paste was applied 3 times per day with a sponge applicator after the mouth was rinsed with sterile water.



Figure 2. Case 1. A 17-year-old oncology patient with acute lymphoblastic leukemia developed oral mucositis after chemotherapy (A) at presentation and (B) after 5 days of honey paste application.

After 4 days of use, the patient began to show signs of improvement. The staff noted decreased black crusting to the lips, and, within 5 days, the wounds began to decrease. The honey paste was discontinued after 5 days, and there were no signs of oral mucositis (Figure 2B). Patient would continue to use honey paste during hospitalization if oral mucositis reoccurred over the course of several months.

Case 2. A 9-year-old oncology patient with chronic active Epstein-Barr virus that presented with hemophagocytic lymphohistiocytosis-like characteristics developed oral mucositis after chemotherapy. The lips were crusted black with dried blood, and large ulcers were on the tongue, gums, and inner cheeks (Figure 3A). This patient was intubated. The Leptospermum honey paste was applied 3 times per day with a sponge applicator after use of prepackaged oral care kit. Within 3 days, the staff noted decreased crusting to the lips. At 5 days, no signs of oral mucositis were present (Figure 3B). The honey paste was discontinued after 5 days.

Case 3. A 9-month-old oncology patient with a combination of acute myeloid leukemia and ALL presented to the hematology/oncology unit with chemotherapy-related oral mucositis; a wound care nurse consult was requested for treatment. The lips were crusted black with dried blood, and large ulcers on the tongue, gums, and inner cheeks were noted. Due to the patient's age, standard mouth rinses were not an option. This patient frequently used a pacifier and did not receive oral intake. Oral care included potable water and gauze. The staff placed petroleum jelly on the patient's pacifier and lips, which led to her refusing her pacifier. *Leptospermum* honey paste was applied 3 times per day to the pacifier as an alternative care option. The patient displayed minimal discomfort and easily took the pacifier. Within 48 hours, the staff noted decreased crusting to the lips, and, within 3 days, the patient began drinking clears. The honey paste was discontinued after 3 days. At 5 days, no signs of oral mucositis were present. (No photos available.)

Limitations

Although this product is not promoted as an oral medication,² its efficacy has been shown in adult patients with oral mucositis.^{3,4} Clinical trials should be considered to examine whether chemotherapy-induced oral mucositis resolves more quickly with *Leptospermum* honey paste versus other mainstay treatments. Further studies are needed to assess if the *Leptospermum* honey paste could be beneficial with other types of pediatric oral mucositis, including patients with Stevens-Johnson syndrome or herpetic oral lesions. In addition, protocol development would be needed with the next phase to prevent incorrect use and overuse.

Conclusions

Overall, 10 patients were observed, and many showed a preference to the honey paste. The *Leptospermum* honey paste was easy to apply, received well, and an effective alternative for oral care. Since this product is not advised for use as an oral medication, further studies should be undertaken to examine the healing rates of oral mucositis related to chemotherapy treatments over standard care. Also, studies should evaluate whether a honey paste would be beneficial in other types of pediatric oral mucositis.

References

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Figure 3. Case 2. A 9-year-old oncology patient with chronic active Epstein-Barr virus presented with hemophagocytic lymphohistiocytosis-like characteristics and oral mucositis after chemotherapy (A) at presentation and (B) after 5 days of honey paste application.

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