

The Mortar & Pestle:

MD Custom Rx's monthly e-newsletter

February 2017

Greetings!

Thank you for entrusting in the compounding services at MD Custom Rx to help meet the unique medication needs of your patients. We are excited to share our monthly newsletter with you and look forward to continuing to be your medication problem solvers. Please don't ever hesitate to let us know how we can be of further assistance to you and your practice.



Sincerely,
Dan, Monica and John

Mucoadhesive Polymer Blend for Application of Medications to Oral Mucosa

The efficacy of active pharmaceutical ingredients (API) in compounded medications for oral mucosa greatly depends on the composition of the base. Researchers assessed the safety, facilitation of cell migration, and mucoadhesive properties of a newly developed mucoadhesive polymer blend (MPB) which contains pullulan, tamarindus indica polysaccharide, and sodium hyaluronate. No cell death was observed when human oral keratinocyte and fibroblast cells were exposed to 1% MPB for 24 hours. Epithelial cells in a 3D buccal tissue model (EpiOral) were unaffected when exposed to 50% MPB for 20 hours. The expressions of cytokines IL1 α and IL1 β and cell proliferation markers in EpiOral tissue did not increase suggesting that MPB is neither an irritant nor a mitogen. Markers of apoptosis were not observed in cells exposed to MPB. MPB showed stronger mucoadhesion on the human EpiOral tissue model compared with a reference product. The research concluded that MPB can safely deliver an API within the oral mucosa, facilitate cell migration, and may increase drug efficacy through its strong mucoadhesive property.



Topical Tranexamic Acid in Hemostasis of Locally Advanced Basal Cell Carcinoma

Tranexamic acid (TXA) is conventionally used orally or intravenously but topical administration has the ability to reduce bleeding with minimal systemic absorption, thereby reducing the risk of systemic side effects. Topical TXA reduces blood loss in cardiac, orthopedic, and otolaryngologic surgery. However, the hemostatic role of topical TXA for the skin has not been fully established. Wong et al. describe a case of an elderly female with locally advanced basal cell carcinoma (BCC) of the scalp. Bleeding from the tumor was reduced with the aid of topical TXA. Although there are topical curative therapies for patients with low-risk superficial BCC, such as 5-fluorouracil and imiquimod, there is no evidence of these therapies being effective for locally advanced BCC. In this case, the primary goal was palliative wound care due to various medical and ethical complexities, such as the advanced nature of the disease, the patient's cognitive decline, and her family's decision for comfort care only.

TXA inhibits local fibrinolysis by blocking binding sites of plasminogen and preventing the conversion of plasminogen into plasmin. A recent meta-analysis of studies involving topical TXA did not show an increased risk of thromboembolic events such as myocardial infarction, stroke, pulmonary embolism, or deep vein thrombosis compared with control groups. Topical TXA is a promising therapeutic option for the hemostasis of locally advanced BCC or other skin malignancies, especially for patients who are unsuitable for surgery or radiotherapy. Larger studies are needed to evaluate the efficacy and safety of topical TXA as an adjunct to control bleeding of tumors.

[JAAD Case Rep. 2016 Apr 19;2\(2\):162-3.](#)

Topical Tranexamic Acid in Anticoagulated Patients Undergoing Minor Oral Surgery

A systematic review and meta-analysis was performed using randomized clinical trials which investigated the efficacy and safety of topical tranexamic acid (TXA) compared to other topical hemostatic agents or placebo solution to prevent postoperative bleeding in anticoagulated patients undergoing minor oral surgery. The pooled relative risk indicated a protective effect of topical TXA on bleeding after minor oral surgeries, and subgroup analysis revealed that topical TXA was effective in preventing postsurgical bleeding compared to placebo. No cases of thromboembolic events were reported.



Currently available evidence suggests that surgical site irrigation with TXA followed by TXA mouthwash during the first postoperative week may reduce the risk of bleeding after minor oral surgeries in anticoagulated patients.

[J Craniofac Surg. 2017 Jan;45\(1\):20-26.](#)

Zinc Pyrithione Improves the Antibacterial Activity of Silver Sulfadiazine Ointment

A new category of chronic infections, known as biofilms, are caused by bacteria growing in slime-enclosed aggregates. In cases where bacteria succeed in forming a biofilm within a human host, the infection often turns out to be untreatable and will develop into a chronic state. Biofilm infections, such as pneumonia in cystic fibrosis patients, chronic wounds, chronic otitis media and implant- and catheter-associated infections, affect millions of people in the developed world each year and many deaths occur as a consequence.

Pseudomonas aeruginosa, *Acinetobacter baumannii*, and *Staphylococcus aureus* are commonly associated with wound infections that are recalcitrant to conventional antibiotics. Zinc pyrithione has bactericidal activity for *A. baumannii* and *S. aureus* biofilms, and exhibits an additive effect in combination with silver sulfadiazine, a leading topical therapeutic for wound site infections.

A study at the University of Rochester School of Medicine showed that the improved antimicrobial activity of zinc pyrithione and silver sulfadiazine was maintained in an ointment formulation and led to improved clearance of *P. aeruginosa*, *A. baumannii*, and *S. aureus* in a murine model of wound infection. Taken together, these results suggest that topical zinc pyrithione and silver sulfadiazine combination formulations may mitigate wound-associated bacterial infections and disease progression.

Topical antimicrobial ointments purportedly mitigate bacterial wound disease and reliance on systemic antibiotics. Yet studies have called into question the therapeutic benefits of several traditional topical antibacterials, accentuating the need for improved next-generation antimicrobial ointments. However, the development of new chemical entities is time-consuming and expensive. An alternative approach is to improve the performance of conventional antimicrobial ointments by the addition of a well-characterized and FDA-approved agent. Data indicates that the antimicrobial properties of silver sulfadiazine ointments can be improved significantly by the addition of zinc pyrithione, and may provide an improved therapeutic option for the topical treatment of wound infections.

[mSphere. 2016 Sep 14;1\(5\).](#)

[APMIS Suppl. 2013 May;\(136\):1-51.](#)

Aphthous Ulcer Healing

Recurrent aphthous ulcer (RAU) is one of the most common ulcerative diseases of the oral mucosa which is painful and slow to heal. Treatment is primarily for pain relief and promotion of healing to shorten the disease duration or reduce the rate of recurrence. Application of a topical buccal mucoadhesive film containing 1 mg prednisolone sodium phosphate was convenient, reduced the treatment period and decreased the side effects associated with systemic treatment.

[Curr Drug Deliv. 2016 Mar 16.](#)

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