

# Novel Use of Topical Ivermectin for the Prevention of Facial Insect Bites

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## ABSTRACT

Options to prevent facial insect bites while sleeping are limited. Patients may prefer to avoid facial application of potentially neurotoxic insect repellants. Non-toxic “natural” repellants have limited efficacy, and netting may not be well-tolerated. Nightly facial application of 1% topical ivermectin (IVM) cream completely prevented overnight bites in 2 patients, both of whom reported recurrent bites after discontinuation, and a return to complete bite prevention after IVM resumption. Topical IVM may be an alternative facial mosquito bite prevention modality.

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## INTRODUCTION

Insect bites not only carry the potential to spread disease but also cause significant discomfort. DEET and other chemical pest-repellents are potentially neurotoxic.<sup>1</sup> Natural repellents based on essential oils show very limited efficacy.<sup>2</sup> Many patients do not tolerate mosquito netting.<sup>3</sup>

Ivermectin (IVM), a potent endectocide with a broad safety index used since the 1980s, acts through an unclear mechanism upon glutamate-gated chlorine channels.<sup>4</sup> Studies support that the blood of vertebrates injected with ivermectin is lethal to mosquitos in a dose-dependent manner;<sup>5</sup> however, oral (PO) and intravenous (IV) IVM are not approved for chronic use. On the other hand, the absorption rate of topical IVM is lower than other formulations, resulting in a safer, more appropriate drug for long-term use.<sup>6</sup> Hence, topical IVM is approved for chronic use to treat demodex rosacea. Effects of topical IVM on mosquito bite prevention have not been previously published.

## MATERIALS AND METHODS

Two patients were repeatedly bitten on the face at night by Ceratopogonidae, AKA “no-see-ums,” small biting seasonal mosquitos (Figure 1). One caught and photographed a likely

**FIGURE 1.** Bite reactions on the face of a patient.



**FIGURE 2.** Insect of the family Ceratopogonidae aka “No-see-um/biting midge.” (2 mm – 3 mm)



culprit (Figure 2). Neither patient tolerated mosquito netting at night, and both wished to avoid nightly application of potential neurotoxins such as DEET. Safer insect repellents containing essential oils did not work. They therefore applied 1% IVM cream to their faces before bed and assessed themselves for new bites each morning. They treated for 3 weeks on, then off, and then on again.

## RESULTS

Both noted complete prevention of mosquito bites on the nights where 1% IVM cream was applied. Bites recurred after stopping 1% IVM cream. Complete prevention was again noted after restarting 1% IVM cream.

## DISCUSSION

Topical IVM prevented insect bites on the treated areas of the face. The pattern of recurrent bites after stopping IVM, and recurrent prevention after restarting IVM, provides further support for efficacy. Safety of topical 1% IVM cream is supported by its prolonged use as a treatment for lice and rosacea.<sup>7,8</sup> While

further work is needed, topical IVM could potentially be an alternative facial mosquito bite prevention modality for some patients.

### DISCLOSURES

The authors have no funding sources or conflicts of interest to declare.

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