

Bloodroot

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BLOODROOT (*Sanguinaria canadensis*) is a flowering herb that can be used as a drug. Historically, it was widely used by Native Americans in blood tonification and purification, pain and fever relief, and wound healing. Bloodroot plants have been advertised to impart a wide range of medical properties, and many bloodroot-containing products are commercially available. Potential side effects of bloodroot products include significant tissue destruction, escharification, and keloid formation. Therefore, it is critical for clinicians to be aware of potential risks, educate their patients on treatment options, and be able to recognize the cutaneous effects of bloodroot and other escharotic agents.

EN ROUTE to the latest American Academy of Dermatology Meeting, casual perusal of the airline inflight magazine revealed an advertisement for a “mole, wart, and skin tag removal” cream called DermaTend (Solace International, Inc., Reno, NV). Further investigation discovered that the ingredients of this cream included bloodroot (*Sanguinaria canadensis*), vegetable glycerin, distilled water, and butter of zinc.¹ Mole removal creams that contain bloodroot extracts are commercially available to customers who may be unaware of their potentially dangerous adverse effects. These products are responsible for many dermatological misadventures such as significant tissue destruction, scarification, and keloid formation.^{2,3} An informal Google search on bloodroot extracts-containing products revealed that DermaTend is one of the most popular and accessible brands (Table 1).

Bloodroot is a perennial, flowering herb native to eastern North America (Fig. 1). The herb is the only species of its genus within the Papaveraceae family (commonly known as the poppy family). Bloodroot plants are often used ornamentally because of their double flowering forms (flowers within flowers). As a drug, bloodroot plants have been touted to impart expectorant, antispasmodic, emetic, cathartic, nervine, escharotic, stimulant, alterative, antibiotic, diuretic, febrifuge, and sedative properties.^{4,5} Historically, bloodroot was widely used by Native Americans in blood tonification and purification, pain and fever relief, and wound healing.⁶ Today, it is used as an antiplaque additive in mouthwash and toothpaste. It is also added to livestock feed for its antibiotic properties. Various

types of bloodroot-containing “black salves,” such as DermaTend, often claim to be effective for removal of nevi and other exophytic skin lesions.

Many Internet-marketed pastes containing bloodroot and/or zinc chloride (another escharotic chemical) are touted for their similarity to Mohs paste. Mohs paste originated from the father of Mohs surgery, Frederic E. Mohs, but his original Mohs paste was not used as a curative therapy. It was used for in situ tumor tissue fixation in Mohs surgery, and it was believed to be a requirement for immediate histologic review of surgical margins.⁷ Fresh-frozen tissue sampling eliminated the usage of Mohs paste when it was demonstrated that in situ tissue fixation was unnecessary and unwarranted given the adverse effects of pain and healthy tissue destruction resulting in prolonged surgical procedures and impaired closures.⁸ Harry Hoxsey, a lay cancer specialist, developed similar bloodroot-containing agents to Mohs paste for topical and internal treatments of cancer.⁷ In the 1950s, the Food and Drug Administration (FDA) blocked interstate shipments of Hoxsey's formulas and issued a nationwide public warning against such products, in response to denouncements of Hoxsey's treatments in the medical community.⁷ The FDA continues to keep a list of fake cancer cure products for consumer avoidance, which includes bloodroot products such as Cansema (Alpha Omega Labs, Doral, FL and Guayaquil, Ecuador) and other black salves.⁹ However, despite FDA efforts through press releases, warning letters to various companies, and trade restrictions, bloodroot products such as DermaTend continue to persist on the Internet and in public forums such as airline inflight magazines.

Several case reports have documented the escharotic nature of bloodroot-containing topical products. A 53-year-old man developed intense pain and purulent ulceration after applying an unidentified bloodroot-containing topical, which doubled the size of the original skin lesion.² Another report described a 42-year-old man with a history of metastatic colon cancer who used black and yellow bloodroot salve to treat palpable subcutaneous nodules on his anterior abdominal wall; within 8 days, he developed an enterocutaneous fistula.² A 51-year-old man used bloodroot on a basal cell carcinoma on his nose and reported 3 days of agonizing

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TABLE 1. Bloodroot-Containing Products Found on the Internet—Accessed May 31, 2012

Trade Name	Manufacturer	Web Site	Health Claims
DermaTend	Solace International, Inc	http://www.dermatend.com http://www.amazon.com	Removes moles, warts, or skin tags
Black Bloodroot Salve	Wise Ways Herbals (Worthington, MA)	http://www.amazon.com	Penetrating, deep-drawing escharotic skin salve for cellular imbalances, tumors, or serious skin rashes. Also great for itch relief from chigger and bed bug bites
Moles, Warts & Skin Tags Removal	Charles Davidson	http://wartsremovaladvice.info/6364/ bloodroot-mole-removal-cream	Works on all types of moles, warts, and skin tags, even external genital warts
Breath, Teeth and Gum Bloodroot Nutritional Tea Spray	Risingsun Herbal Health (Livingston, MT)	http://www.bloodrootproducts.com/	General oral hygiene
Cansema	Alpha Omega Labs	http://www.altcancer.com/products/ bloodroot-paste	Guarantees 100% success in the removal of dermal or epidermal malignant lesions, including basal cell, squamous cell epitheliomas, and even melanomas—regardless of type or size... or the treatment is free and payment is refunded
ABLE Skin Balm	Bieson Wellness Center	http://www.biesonwellnesscenter.com/ able-products.html	Once absorbed into the blood stream, have the ability to seek out undesirable matter, dissolve, and then flush it out of the system naturally with no side effects. Many thousands of people have gained relief using this compound
Bloodroot	Herb Pharm (Williams, OR)	http://www.herb-pharm.com http://www.amazon.com	No clear indication
Black Salve/Bloodroot Salve	Rose Hill Herbal Products	http://www.amazon.com	Destroys unhealthy skin cells. Will only attack unhealthy skin cells
Perfect Balance Black Salve	Perfect Balance (Reno, NV)	http://www.perfect-balance.net/ products.html	Removal of moles, warts, boils, skin tags, "abnormal growths," and other foreign objects. Used on infectious cuts because of the anti-inflammatory/bacterial properties it possesses. Has been known to be used to effectively neutralize bites from poisonous insects/animals
Bloodroot	Eclectic Institute (Sandy, OR)	http://www.eclecticherb.com	No clear indication on Web site
TumorX	BioAnue Laboratories, Inc (Rochelle, GA)	http://www.cancerx.org http://www.bioanuelabs.com/ herb-page-one.html	Various types of cancers including skin carcinoma and melanoma

pain, followed by eschar development and finally an irregular, large, depressed scar.¹⁰ Another 49-year-old man self-treated his basal cell carcinoma with bloodroot, and the treatment caused marked irritation in addition to a large triangular keloidal scar.⁷ Dharamsi et al¹¹ reported a naturopath who treated his father's

squamous cell cancer of the scalp with black salve; it ultimately metastasized.

Physicians have also improperly recommended bloodroot products. One of the most serious complications was seen in a 64-year-old woman, who used a black salve treatment for her cancerous nasal



Figure 1. Bloodroot flower and root (source: www.naturepods.com, permission received).

lesion, per advice from her plastic surgeon.¹² The treatment resulted in the development of full-thickness eschar, which ultimately warranted the excisional removal of her entire nose.¹²

Sanguinarine (13-methyl[1,3] benzodioxolo[5,6-c]-1,3-dioxolo [4,5-i] phenanthridin-13-ium) is a quaternary ammonium salt belonging to a group of alkaloids known as the benzylisoquinoline alkaloids. It is produced by bloodroot plants and their relatives such as Mexican prickly poppy. Sanguinarine has diverse biological activities such as antimicrobial and anti-inflammatory activities,¹³ and it also modulates DNA transcription by interaction with nuclear factor- κ B and several other enzymes.¹⁴ In addition, it has been found that sanguinarine is cytotoxic through inhibition of Na/K adenosine triphosphatase.¹⁵ Sanguinarine is also linked to oral leukoplakia when used in mouthwash and toothpaste.^{16,17} On the skin, it can cause keloid and eschar formation and irritant contact dermatitis. Bloodroot also contains other isoquinoline alkaloids including chelerythrine, oxyanguinarine, berberine, coptisine, and homochelidine. The opiate alkaloids protopine and α - and β -allocryptopine are also found in bloodroot plants. A literature search found no reports of allergic contact dermatitis to these compounds.

Sanguinaria extract is toxic, and its improper application has been shown to cause serious adverse effects.^{2,7,10,11} Appropriate dosing of both topical and internal treatment regimen for specific conditions is crucial to achieve therapeutic effects rather than unwanted complications. The FDA considers *Sanguinaria* extracts at 0.03% to 0.075% safe for oral rinses or dentifrices but state that there is insufficient evidence of efficacy.¹⁸ Furthermore, the FDA also warns that many other bloodroot products are not generally recognized as safe and effective.¹⁸ Given the lack of standardization for herbal preparations, precise dosing of bloodroot extract is difficult for treating human diseases. Indeed, laboratory findings showed that the length of exposure and the dose of the drug were both critical for cell effects.¹⁹ Perhaps in the future after standardization, bloodroot extract could become an accepted medical treatment, similar to other "toxic" substances such as botulinum toxin and cantharidin.

In conclusion, as students of contact dermatitis, we should recognize the potential danger in topical application of bloodroot. Letters to the airline's inflight magazine selling DermaTend have gone unanswered thus far. Because products containing these toxins are easily available to the general public via the Internet, it is critical for clinicians to be aware of the potential adverse effects, educate their patients on proper treatment options for dermal nevi and other skin lesions, and be able to recognize the dermal effects of bloodroot and other escharotic agents.

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