

Botanical Briefs: The Century Plant— *Agave americana* L.

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Clinical Importance/ Cutaneous Manifestations

Agave americana, the century plant, is best known for its tequilalike liquor extract called *mescal*. However, occupational or casual exposure to this “American aloe” can produce an immediate erythematous eruption, severe pruritus, and, in extreme cases, serious systemic reactions.¹ After contact with causative plant parts, affected individuals often describe burning sensations of rapid onset that later evolve into prominent signs of erythema and edema. The clinical manifestations of *A americana*-induced dermatitis can vary greatly. Typically, patients demonstrate generalized pruritic vesiculopapular eruptions arranged in linear configurations.²

Most naturally occurring skin reactions to *A americana* appear within several hours. However, experimentally induced responses via open patch tests can erupt within minutes of exposure.³ Follicularly accentuated contact urticaria, pruritic palpable purpura, and localized leukocytoclastic vasculitis occasionally have been reported (Figure 1).^{4,5} Severe cases of *A americana* dermatitis can be associated with systemic symptoms including fever, leukocytosis, headache, diarrhea, and myalgia.² Other, more rare, associations include: contact conjunctivitis, gastrointestinal obstruction from phytobezoars, scalp dermatitis from hair-loss



Figure 1. *Agave Americana*-induced eruption with palpable purpura in a linear and whorled pattern. (Photograph courtesy of Dirk M. Elston, MD.)

remedies containing *Agave*, and self-inflicted dermatitis in malingering soldiers.^{2,5,6}

Economically, the plant parts of *A americana* are used in the manufacturing of dish detergents, special twine called *sisal hemp*, and *mescal*. In addition, *A americana* extracts are often included in folk remedies for their diuretic and laxative properties, as treatments for rheumatism, as birth control steroid precursors, in toothache elixirs, for the extermination

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The authors report no conflict of interest.

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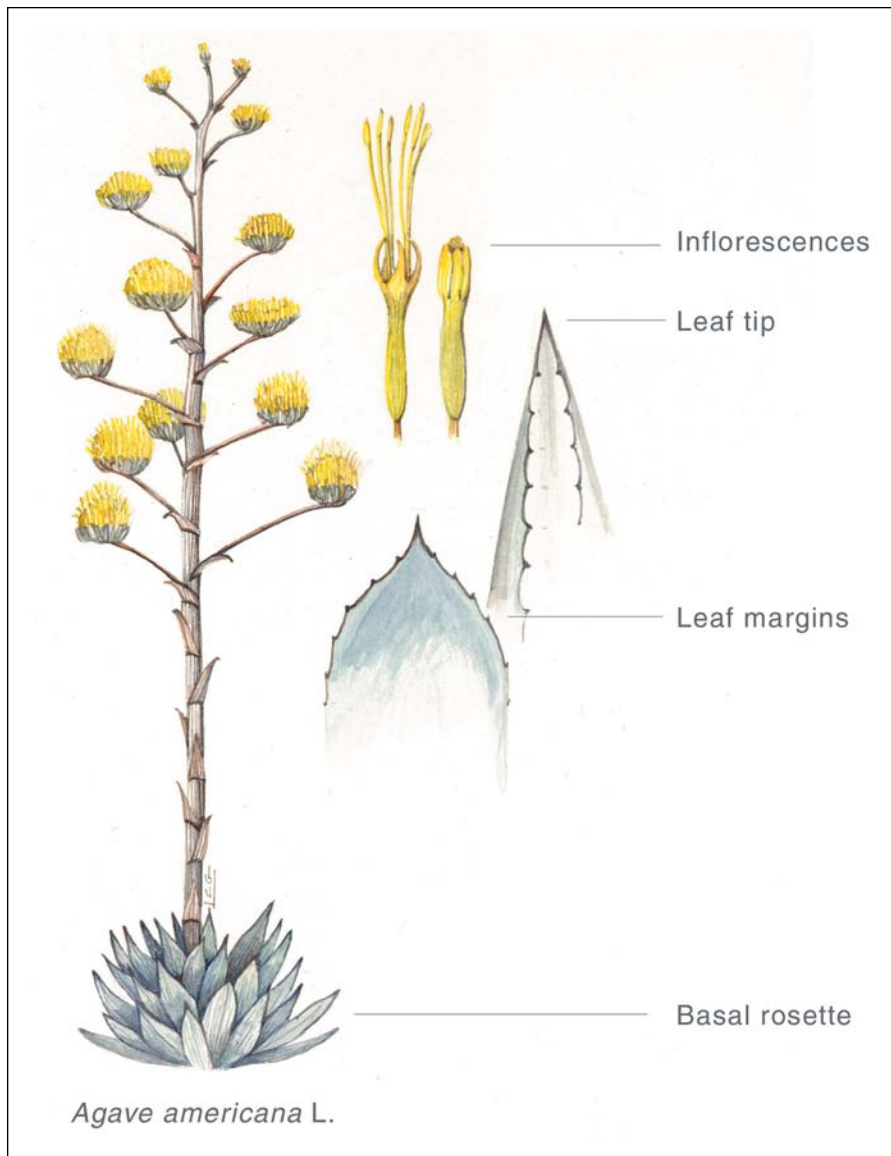


Figure 2. *Agave americana*. (Illustration courtesy of Lara C. Gastinger, Stanardsville, Virginia.)

of termites, and in an ancient anxiolytic Aztec liquor called *pulque*.

Family/Distribution of Plant

The Agavaceae family is a large, long-living flora, containing 20 genera. The *Agave* genus consists of over 600 species. Native to hot and semi-arid regions, these Yucca-like plants can be found along the Mediterranean coasts, throughout Mexico, and in many areas of the southwestern United States. *Agave* species also are found in more northern climates; however, these species usually are much smaller.

Nomenclature

Agave is Greek for *noble*, reflecting the plant's tall secondary growth-stage bloom, called the

inflorescence. This stalk can grow as high as 40 feet.⁵ *A americana* is known by more than one alias, namely *Maguey*, *American aloe*, and *Century plant*.⁷ *Maguey* is a local Mexican term that describes the plant's likeness to palm. Additionally, the nickname *Century Plant* emerged from the mistaken belief that the tall rosette of pale yellow flowers blossomed only after 100 years. In truth, depending on its environment, the plant's single bloom can appear anytime between 5 and 100 years.⁸

Identifying Features/Plant Facts

A americana is adorned with thick succulent gray-green leaves that curl upward and emanate from a low basal rosette (Figure 2).⁷ The prickly leaf margins are lined with curved spines resembling

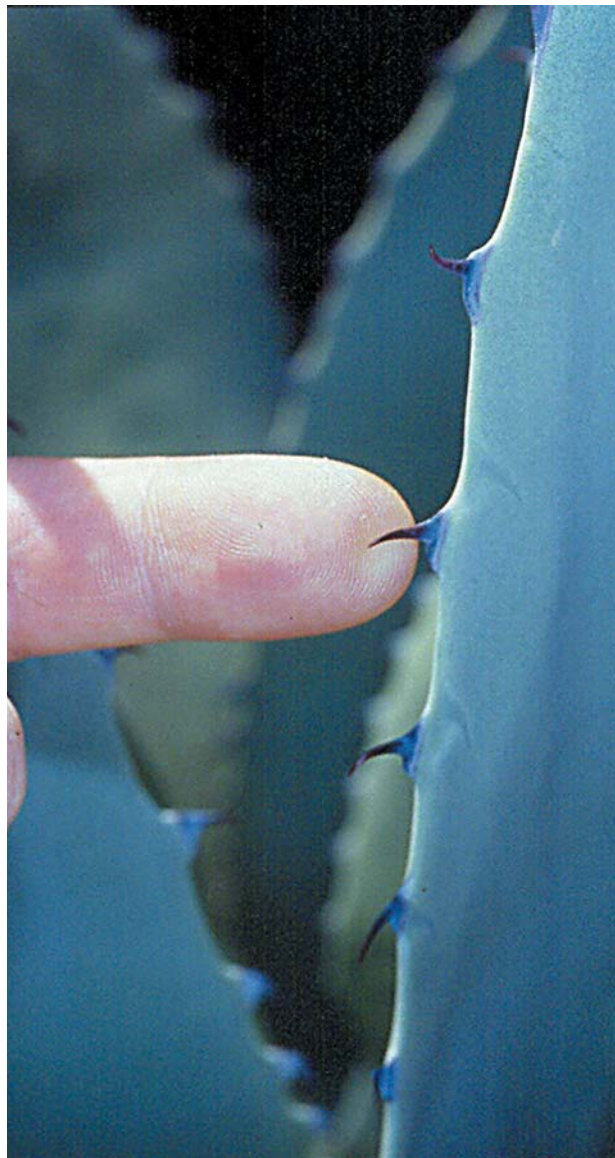


Figure 3. Leaf margin of *Agave americana* demonstrating curved spines resembling fishhooks.

fishhooks, some more than an inch in length (Figure 3). After storing an ample supply of nutrients in their rhizomes, *Agave* species sprout tall stalks with distal yellow-green flowers and die shortly thereafter.

Dermatitis-Inducing Plant Parts

The sap appears to be the most irritating part of *A americana*. However, skin-aggravating factors also may be present in the leaves, stem, flowers, roots, and bulbs.

Allergens/Irritants

Calcium oxalate is highly concentrated in the sap of *A Americana*. In addition, sharply pointed, bundled crystals of calcium oxalate, called *raphides*, can embed in human skin. The resultant contact dermatitis is akin to that caused by other calcium oxalate-containing plants, such as daffodils, pineapples, and *Dieffenbachia* species.⁹ Patch tests of *A americana* sap indicate a direct toxic process rather than delayed hypersensitivity.³ In severe instances, oxalic acid functions as a systemic poison that causes acidosis, vascular damage, and renal tubule obstruction.^{10,11} The rapidity of skin and systemic symptom onset supports the role for a potent, quick-penetrating chemical in the pathogenesis of *Agave* reactions. Characterization of this theorized agent remains the subject of further study.

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