

PHOTOESSAY

Indigenous Hawaiian Nonmedical and  
Medical Use of the *Kukui* Tree

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The *kukui* (*Aleurites moluccana*) tree. Photo credit: Forest and Kim Starr, United States Geological Survey.

*“The kukui is a large tree in areas close to the mountains.  
Its fruit is a source of great value in the healing arts.”*

—Territorial Board of Health (translation by Malcolm N. Chun)<sup>1</sup>

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The *kukui* tree was an essential part of ancient Hawaiian life, with the native Hawaiians using nearly all parts of the tree in many aspects of their daily activities (see photo on the first page of this Photoessay). This unique tree provided spiritual meaning in the embodiment of the pig god, *kama puua*, and the blossom is now the official flower of the island of Molokai.<sup>2,3</sup> *Kukui* is the Hawaiian name for the *Aleurites moluccana* tree, which was established as Hawaii's state tree via the Hawaii tree resolution, which stated:

WHEREAS, the multiplicity of its uses to the ancient Hawaiians for light, fuel, medicine, dye and ornament and its continued value to the people of modern Hawaii, as well as the distinctive beauty of its light green foliage which embellishes many of the slopes of our beloved mountains, causes the *kukui* tree to be especially treasured by the people of the Fiftieth State of the United States as an arboreal symbol of Hawaii *nei*.\*

The plant belongs to the *Euphorbiaceae* or spurge family and can be found from southeast Asia to Hawaii, and most recently in India and tropical central America.<sup>4</sup> The tree's height ranges between 30 and 50 feet and it produces cream-colored flowers and hard-shelled fruit, which contains the valued nut.<sup>†</sup> Ancient Polynesian voyagers introduced the plant to Hawaii more than 1500 years ago and valued the plant primarily because its nut contained 50%–60% oil. The nut was most notably used as a source of light, hence the tree's European name, candlenut.<sup>5</sup> The tree continues to grow on the mountain slopes of Hawaii and is distinguished from the other foliage by its light-green silvery leaves.

Very little information on the *kukui* tree was available on MEDLINE,<sup>®</sup> so the majority of our references came from the University of Hawaii's Hamilton Library Native Hawaiian collection (in Honolulu, HI). In addition, an indigenous Hawaiian healer who wishes to remain anonymous was consulted on the traditional uses of the *kukui* tree that remain today.

\**nei* means place.

Traditionally, the entire plant had many nonmedical uses in everyday life. The *kukui* tree's most prominent use in ancient Hawaii was as a source of light, according to both Kepler and Abbott.<sup>6</sup> The oil within each nut provided at least 3 minutes of light. Depending on the amount of illumination required, indigenous Hawaiians used different kinds of torches that ranged from simple candlelike devices to oil-filled stone bowls.<sup>7</sup>

The *kukui* tree also had a myriad of other uses: Canoes were made from the trunk; various dyes were obtained from the root, bark, and burned nut; polish, paints, and varnishes were made from the oil; food and condiments were provided by the roasted nut; ornaments (leis) and entertainment (spinning tops) were created from the fruit; and medicines were derived from the leaves, flowers, bark, and nut.<sup>2,5,8</sup> After the arrival of new people in Hawaii, the *kukui* lost its importance and its use gradually declined. Today, *kukui* is still used in food, leis, and medicine.

*Kukui* was the most commonly used plant in native Hawaiian medicine and was used to treat a wide variety of minor ailments (Table 1).<sup>2</sup> An herbalist or *kahuna la'au lapa'au* often gathered and prepared *la'au* (the Hawaiian term for plant material used in the medicinal mixture). Each treatment was tailored to each patient. The herbalists' extensive knowledge of *la'au* spanned three different disciplines we consider to be separate today—botany, pharmacology, and medicine.<sup>5</sup> Throughout the healing process, prayer was performed at every step until the patient was healed. Treatment was believed, and is still believed, to be 80% spiritual and 20% *la'au*.<sup>6</sup>

It was common knowledge among indigenous Hawaiians that the sap, or chewed *kukui* flowers, would heal thrush (candidiasis), and the edible raw nut was used as a laxative. *Kukui* was used to treat constipation, wounds, infections, asthma, sore throat, arthritis, and numerous skin disorders, and other conditions.<sup>7,8,†</sup> Having both internal and external medical applications, *kukui* is considered to be a powerful *la'au* by traditional healers to this day.

†Judd N. *Laau Lapa'au: A Geography of Hawaiian Herbal Healing* [dissertation]. University of Hawaii, Honolulu, HI, 1997.

TABLE 1. EXTERNAL AND INTERNAL USES OF THE *KUKUI* TREE IN NATIVE HAWAIIAN MEDICINE

External uses	
Oil	Treat skin ailments, prevention of stretch marks
Sap	Seal cuts and wounds
Leaves	Poultices for cuts, bruises, broken bones, and muscle problems
Various parts	Poultices and creams for sores, cuts, boils, fractures, respiratory and ear/nose/throat problems, and arthritis
Internal uses	
Nut	Purgative/cathartic for constipation
Sap	Treat oral thrush, sore throats
Blossoms	Treat sore throat
Gum	Strengthen teeth
Bark	Infusions for sore throat, oral thrush, tonsillitis, and mouth sores

Parts of the *kukui* tree were used to treat a variety of internal problems such as ear, nose, and throat disorders, as well as respiratory and gastrointestinal difficulties.<sup>7\*</sup> The sap from freshly plucked nuts was used to treat oral thrush, sore throats, and cold sores in infants and children.<sup>7,8</sup> The blossoms or bark were made into an infusion to treat similar ailments and upper respiratory illnesses such as tonsillitis.<sup>5,†</sup> The ripe nut was made into a concoction used to loosen phlegm associated with bronchitis and throat problems.<sup>3</sup> Gum from the trunk was used, especially by children, to chew on and thus strengthen teeth.

Studies have shown that *kukui* tree plant extracts (bark and sap) produce antibacterial, antiviral, and antifungal activity.<sup>†</sup> For instance, an extract from the leaves inhibited the growth of *Staphylococcus aureus*.<sup>†</sup> Also supporting the ancient use of the plant extracts against microorganisms is the report by Locher et al., finding that *A. moluccana* extracts had antibacterial activity against *S. aureus* and *Pseudomonas aeruginosa*.<sup>9</sup> Recently, researchers have reported that the leaves may actually have lipid-lowering capability, as was shown in rats fed a high-fat diet.<sup>10</sup>

Raw (Fig. 1) and roasted nuts were used as consumable cathartics to treat constipation.<sup>7,8,†</sup> Other treatments for constipation included ingesting the kernel oil or the blossoms.<sup>7,8,†</sup> The oil of the *kukui* nut has a strong purgative effect and the nut was sometimes mixed with salt water and used as an enema.<sup>11</sup> Loss of appetite was resolved by chewing on the bark or drinking a bark cocktail.<sup>3</sup>

A major external use of this plant was for treating infected skin sores and ulcers.<sup>11</sup> For instance, the sap and leaves were used to prevent infections by sealing the wound. The leaves were made into poultices to provide pain relief for patients who had cuts, bruises, broken bones, inflammation, or muscle aches.<sup>1,12</sup> *Kukui* nut oil was applied topically for arthritis and other joint pain.<sup>11</sup> The sap was also used to dry areas of the skin affected by shingles, measles, or chickenpox.<sup>†</sup>

The oil of the roasted *kukui* nut was known to remedy a variety of skin ailments. It was most commonly used to provide relief from irritated or sunburned skin as well as for treating burns. Traditionally, the oil was used only on men because its viscosity prevented rapid absorption into the skin. However, when rubbed a woman's stomach through-



FIG. 1. *Kukui* tree leaves and fruit (nut). Photo credit: Forest and Kim Starr, United States Geological Survey.

out pregnancy, the oil prevented stretch marks from forming. Furthermore, the oil was used to provide elasticity to the perineum of pregnant women. *Kukui* nut oil was massaged onto Hawaiian infants with the belief that it would “seal in” good health and keep out bad health.<sup>3</sup>

### SUMMARY

Indigenous Hawaiians used the *kukui* tree for a variety of nonmedical uses: as a light source (oil); canoe building (trunk); various dyes (root, bark, and burned nut), polish, paint, and varnish (oil); food and condiments (roasted nut); ornaments (leis); and entertainment (fruit). Medical uses of the *kukui* tree included applying it both externally and internally. Hawaiians used parts of the *kukui* tree to treat infected skin sores and ulcers (sap and leaves); to provide pain relief from cuts, bruises, broken bones, inflammation, and muscle aches (leaves); to treat arthritis and joint pain (oil); to relieve dry skin affected by shingles, measles, and chickenpox (sap); to massage infants to keep out “bad health;” and to prevent stretch marks in pregnant women (oil). Internal use for medical purposes included treating oral thrush, sore throats, and cold sores (sap); upper respiratory tract infections such as tonsillitis (infusions of blossoms or bark); bronchitis and throat problems (ripe nut concoction); strengthen children’s teeth (gum from trunk); constipation (raw or roasted nut and oil); and anorexia (bark). Future research on the *kukui* nut tree might be based on its previous uses to determine the active constituents in various parts of the *kukui* tree that may have an effect on these conditions.

### ACKNOWLEDGMENT

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