

Botanical Briefs: The Fig—*Ficus carica* L.

Thomas W. McGovern, MD

Clinical Importance

Figs can cause irritant reactions with erythema, ulceration, or bullae; phototoxic reactions with bullae and hyperpigmentation sometimes followed by depigmentation and keloids; and chronic eczema with paronychia.¹ These dermatoses occur in those who cultivate, gather, pack, or consume figs. The ability of fig plant extracts to stimulate pigmentation in vitiligo patients has been known for almost 2000 years,¹ and in India fig extracts are used to treat eczema and psoriasis.² In addition, the latex has been used as a treatment for warts.³

Family

The family Moraceae (the mulberry family) contains 53 genera with about 1400 species, approximately 800 of which are in the genus *Ficus*. Family members include trees, shrubs, lianes, and herbs that usually have laticifers with a milky latex.³

Distribution of Plant

Ficus carica is probably a native of southwest Asia that rapidly spread to the Mediterranean region, where it was cultivated in Egypt at least 6000 years ago. Today the fig is cultivated mainly in temperate climates throughout the world but also thrives in tropical and subtropical regions. *Ficus carica* can grow among rocks, in woods, and in hot, dry soils. The first figs in the New World were planted in Mexico in 1560. In 1669, Europeans sent figs to Virginia; they were brought to California in 1769.

Nomenclature

The word *Moraceae* is derived from the Latin name for the mulberry tree, and *ficus* is the Latin name for fig tree. *Carica* probably comes from the Latin *carricare* meaning “to load,” suggesting a tree loaded with figs.

Identifying Features/Plant facts

Ficus carica (the common fig tree) should not be confused with *Ficus benjamina* (the weeping fig), a



Figure 1. A young tree of *Ficus carica* L. about 3-foot tall. Note the palmate leaves with “fingers” radiating as from the palm of a hand.

common ornamental. Both are used for decorative purposes or to produce shade in hot climates. However, when one speaks of eating figs, he is referring to the fruit of *Ficus carica*. Figs are the most commonly mentioned food plant in the Bible, with at least 56 references in the Old and New Testaments.⁴ *Ficus carica* is a deciduous tree that grows 10 to 30 feet tall. It has numerous spreading branches, but the trunk rarely grows to a diameter greater than 7 inches. The simple palmate leaves are deeply divided into 3 to 7 main lobes and extend up to 10 inches in length and width (Figure 1). The leaves are thick and rough on the upper surface but soft and hairy on the underside. The fruit is

From Fort Wayne Dermatology, P.C., Indiana.
Reprints: Thomas W. McGovern, MD, Fort Wayne Dermatology,
P.C., 1234 E Dupont Rd, Suite 6, Fort Wayne, IN 46825
(e-mail: twmcgovern@pol.net).

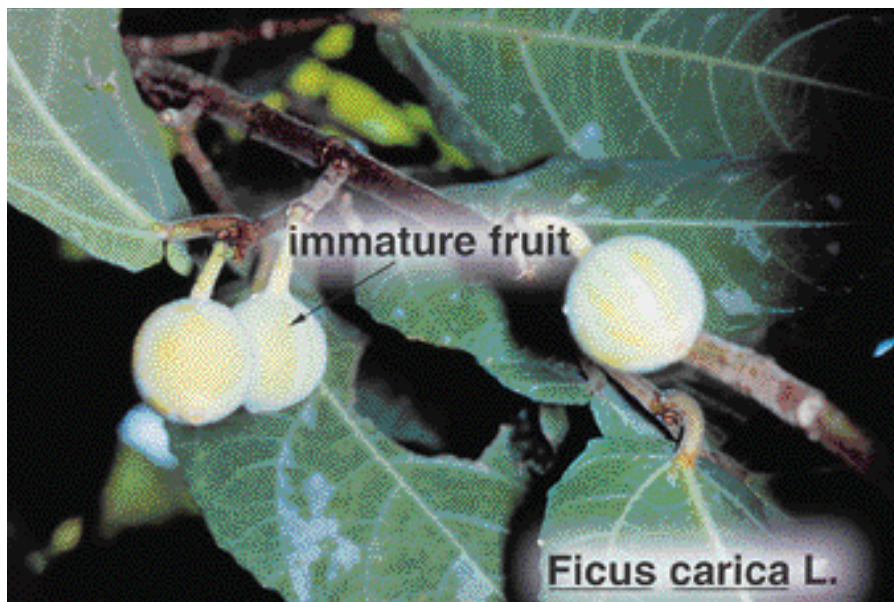


Figure 2. Unripe fruit of *Ficus carica* L. (Labeling courtesy of Medical Photography, Wilford Hall Medical Center, San Antonio, TX.)

technically a synconium (a fleshy hollow receptacle with a small opening at the apex partly closed by small scales). It may be obovoid, turbinate, or pear-shaped, 1 to 4 inches long and varies in color from yellowish-green to coppery, bronze, or dark purple (Figure 2).

Dermatitis-Inducing Plant Parts

Irritant dermatitis has been reported from contact with small hairs (trichomes) on the undersurface of *Ficus carica* leaves. This suggests that fig leaves would have made most unsuitable clothing for Adam and Eve. The latex contains ficin, a proteolytic enzyme that causes pruritus⁵ and acts as an irritant on inflamed skin.⁶ The milky latex found in the leaves and stems seems to contain the irritant and phototoxic chemicals, although one case report suggests that the fruit also contains photosensitizers.⁷

Phototoxic Agents

Two studies have detected furocoumarins in parts of *Ficus carica*.^{8,9} In both studies, fig leaves were examined. Examination revealed that psoralens and bergapten (5-methoxypsoralen) were present throughout the growing season, and psoralens were always more plentiful (3- to 8-fold more than versus bergapten).⁸ Furocoumarins usually are more plentiful in leaf sap than in shoot sap, and concentrations are higher in spring and summer than in fall. Zaynoun et al⁹ studied the presence of furocoumarins in the shoot sap and fruit and found no photoactive coumarins in the seeds, peels, or fruit of ripe or unripe figs. This seems to contradict a

study conducted by Ippen⁷ demonstrating clinical phytophotodermatitis following contact with fresh figs. Perhaps the figs in this study had been contaminated by leaf or shoot sap. Alternatively, the fruit of individual fig plants may either contain or lack furocoumarins.

REFERENCES

1. Schmidt RF. Botanical Dermatology Database (Family Moraceae). Available at: <http://www.Bodd.ac.cf.uk>. Accessed March 10, 2001.
2. Behl PN, Captain RM, Bedi BMS, et al. Botanical Dermatology Database (Family Moraceae). Available at: <http://www.Bodd.ac.cf.uk>. Accessed March 10, 2001.
3. Mabberley DJ. *The Plant Book: A Portable Dictionary of the Vascular Plants*. 2nd ed. Cambridge, England: Cambridge University Press; 1997.
4. Young R. *Young's Analytical Concordance to the Bible*. Nashville, Tenn: Thomas Nelson; 1982.
5. Arthur RP, Shelley WB. The role of proteolytic enzymes in the production of pruritus in man. *J Invest Dermatol*. 1955;341-346.
6. Budavari S, ed. *The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals*. 12th ed. Whitehouse Station, NJ: Merck & Co., Inc; 1996.
7. Ippen H. Phototoxic reaction to figs. *Hautarzt*. 1982;33:337-339.
8. Innocenti G, Bettero A, Caporale G. Determination of the coumarinic constituents of *Ficus carica* leaves by HPLC. *Farmaco [Sci]*. 1982;37:475-485.
9. Zaynoun ST, Aftimos BG, Abi Abi L, et al. *Ficus carica*: isolation and quantification of the photoactive components. *Contact Derm*. 1984;11:21-25.