

Morphoanatomical and micrographic characters of *Ginkgo biloba* L. (Ginkgoaceae) Leaf

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SUMMARY. Whole or fragmented leaves of *Ginkgo biloba* L., a native species from Southeastern Asia, are used in traditional medicine due to its therapeutic properties. The morphoanatomical and micrographic characters of petiole and lamina, the foliar architecture and the surface view of the epidermis are described in the present work. A table containing data that might contribute to the recognition of crude drug is included.

RESUMEN. "Caracteres morfoanatómicos y micrográficos de la hoja de *Ginkgo biloba* L. (Ginkgoaceae)". *Ginkgo biloba* L. es una especie nativa del sudeste de Asia, cuyas hojas enteras o fragmentadas son usadas en medicina por sus propiedades terapéuticas. Se presenta un estudio de los caracteres morfoanatómicos y micrográficos del pecíolo y de la lámina, arquitectura foliar y vista superficial de la epidermis. Se incluye una tabla de caracteres para el reconocimiento de la droga cruda.

INTRODUCTION

Ginkgo biloba L. (Ginkgoaceae)¹ whose common names are tree of forty gold crowns, pagoda tree, adiantum tree, maidenhair tree, and the leaves named as bai-guo-ye, in Chinese traditional medicine, is native from South-eastern Asia². The term Ginkgo probably derives from Chinese Yin-Kuo or Japanese Ginkyo, both meaning silver fruit³.

It is a monotypic genus widely diffused during the Jurassic and Cretaceous. The fossil registers point out that *Ginkgo biloba* was already present during the Permian, and at the present time is found under cultivation throughout the world^{4,5}.

It is a dioecious, caducous, thick-trunked species, with sympodial branching, macroblasts and brachyblasts where the simple petiolated leaves are arranged in fascicles. In the last period of senescence the foliage changes to a brilliant golden shade, due to a high carotenoid retention. The reproductive structures present male flowers with a great number of dorsiventral stamens with two pollen sacs, and female flowers exhibiting, generally, two rudimentary

orthotropous seminal primordia, and 2.5 cm diameter big circular seeds^{2,4-9}. When attaining maturity they change to an orange-yellow shade with a putrid smell, resembling rancid butter due to volatile compounds, such as butyric and hexanoic acid; the latter feature makes the female trees undesirable as ornamental ones^{10,11}.

The stem and root anatomy resembles that of conifers, except for the xylem presenting mucilaginous cavities¹². The differentiation of secreting cavities in the Ginkgo trunk and the assessment of the chemical compounds were carried out by Cartayrade *et al.*¹³. Dute¹⁴ studied in the tiny branch bark the structure and development of bordered pits. Frey Wyssling¹⁵ considers that the pit torus is not condensed, although the package density in the radial fibrils pattern is increased. Esau¹⁶ investigated the anatomical characters of the foliar lamina, and in the 1996 British Herbal Pharmacopoeia¹⁷, the botanical features of the leaves are described. Arnott¹⁸ characterised its venation. Wax epicuticle constituents, such as 10 nonacosanol and nonacosanoids are commonly found in *Ginkgo biloba*¹⁹.

KEY WORDS: *Ginkgo biloba*, Anatomy, Leaf, Micrography.

PALABRAS CLAVE: *Ginkgo biloba*, Anatomía, Hoja, Micrografía.