

研究报告

岷江上游干旱河谷海拔梯度上白刺花叶片生态解剖特征研究

李芳兰^{1,2},包维楷¹,刘俊华^{1,2},吴宁¹

¹中国科学院成都生物研究所,成都610041; ²中国科学院研究生院,北京100039

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摘要

对岷江上游干旱河谷海拔梯度上(1 650~1 950 m)白刺花(*Sophora davidii*)叶片进行生态解剖学研究.观测指标包括叶片形态特征(叶长宽比、叶面积、叶片厚度)、解剖结构(表皮厚度、栅栏组织厚度(P)、海绵组织厚度(S)、P/S比值、表皮角质膜厚度)及叶表皮特征(气孔器密度和面积、表皮细胞密度和面积、表皮毛密度和长度).结果表明,白刺花叶片面积为0.144~0.208 cm²,叶总厚度为171.58~195.83 μm;叶肉组织分化明显,栅栏组织厚度与海绵组织厚度分别为69.83~82.42和62.00~80.67 μm,P/S的比值为1.14~1.01,上下表皮厚度分别为14.03~15.33和13.88~16.17 μm,上下角质膜厚度分别为2.66~4.56和2.76~2.02 μm;气孔密度为13.71~15.02个·mm⁻²,其面积为249.86~280.43 μm²;表皮细胞密度为160.54~178.43个·mm⁻²,其面积为557.43~626.85 μm²;表皮毛长度为186.51~260.99 μm,其密度为18.29~32.27个·mm⁻².随海拔升高叶面积、叶厚度、栅栏组织和海绵组织的厚度、气孔器面积、表皮细胞面积以及表皮毛密度呈增加趋势,而角质膜厚度、表皮细胞密度和表皮毛长度则呈减小趋势;叶长宽比、P/S的比值、表皮厚度与气孔器密度无明显差异.

关键词 [干旱河谷](#) [海拔梯度](#) [白刺花](#) [叶片](#) [形态结构](#) [生态适应性](#)

分类号

Eco-anatomical characteristics of *Sophora davidii* leaves along an elevation gradient in upper Minjiang River dry valley

LI Fanglan^{1,2},BAO Weikai¹,LIU Junhua^{1,2},WU Ning¹

¹Chengdu Institute of Biology,Chinese Academy of Sciences,Chengdu 610041,China;²Graduate School of Chinese Academy of Sciences,Beijing 100039,China

Abstract

This paper studied the eco-anatomical characteristics of *Sophora davidii* leaves at the elevations of 1 650,1 750,1 850 and 1 950 m in the upper reaches of Minjiang River dry valley. The indices investigated were leaf length (LL),leaf width (LW),LL/LW,leaf area,leaf thickness,leaf epidermal thickness,leaf palisade mesophyll thickness (P),leaf spongy mesophyll thickness (S),P/S,leaf cutin membrane thickness,leaf stomatal density and area,leaf epidermis cell density and area,and leaf pubescence length and density. The results showed that the leaves of *S. davidii* were elliptic,with an area 0.144~0.208 cm² and a thickness 171.58~195.83 μm. The mesophyll was significantly differentiated into palisade and spongy. The thickness of palisade mesophyll was 69.83~82.42 μm,that of spongy mesophyll was 62.00~80.67 μm,and P/S was 1.14~1.01. Upper epidermal thickness was 14.03~15.33 μm,while lower epidermal thickness was 13.88~16.17 μm. The stomatal density,stomatal area,epidermis cell density,epidermis cell area,pubescence length,and pubescence density

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were $13.71\sim 15.02\text{ mm}^{-2}$, $249.86\sim 280.43\text{ }\mu\text{m}^2$, $160.54\sim 178.43\text{ mm}^{-2}$, $557.43\sim 626.85\text{ }\mu\text{m}^2$, $186.51\sim 260.99\text{ }\mu\text{m}$, and $18.29\sim 32.27\text{ mm}^{-2}$, respectively. With increasing elevation, the leaf area, leaf thickness, palisade mesophyll thickness, spongy mesophyll thickness, stomatal area, epidermis cell area and pubescence density were increased, while cutin membrane thickness, epidermis cell density, pubescence length, and stomatal density were decreased. There was no significant difference in LL/LW, P/S, epidermal thickness and stomatal density along the elevation gradient.

Key words

[Dry valley](#) [Altitude gradient](#) [Sophora davidii](#) [leaf](#) [Morphological structure](#)
[Ecological adaptation](#)

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