

生物策略表

類別	生物策略 (Strategy)	
生物策略 STRATEGY	葉片在不同光照下改變顏色 (Leaves change colors under different lighting)	
生物系統 LIVING SYSTEM	藤卷柏 <i>Selaginella willdenowii</i> (Willdenow's Spikemoss)	
功能類別 FUNCTIONS	#適應外表型 #Adapt phenotype	
作用機制標題	生長於極陰暗環境的熱帶卷柏，其葉片透過除去光保護薄層來改善光照條件，葉表從虹光藍色轉變成綠色 (Leaves of extreme shade <i>Selaginella</i> tropical ferns change in improving light conditions from being iridescent blue to green by removal of photoprotective coating.)	
生物系統/作用機制 示意圖		
作用機制摘要說明 (SUMMARY OF FUNCTIONING MECHANISMS)		
文獻引用 (REFERENCES)		
<p>「虹光現象 (iridescence) 在卷柏屬 (<i>Selaginella</i>) 中十分常見。在這裡分析的兩個分類群都是原生於潮濕的熱帶森林中極陰暗的地方：東南亞的藤卷柏 (<i>S. willdenowii</i>) 及南中國的翠雲草 (<i>S. uncinata</i>)。在遮蔭的狀況下，這兩個物種的葉片均發展出藍色虹光。在較直接光照下成長的綠色葉片，當改變為陰暗條件下時並不會變成藍色；但藍色葉片會隨著老化或曝露在較直接的光照下而逐漸變成綠色（個人觀察）。森林中葉片的過濾作用形成了一個光合作用能量不足的環境，林下的光線只有樹冠層上方的 0.1-0.3% (Bjorkman and Ludlow, 1972; Bazzaz and Pickett, 1980)。」 (Hebant and Lee 1984: 216)</p> <p>“Blue iridescence is most common in the genus <i>Selaginella</i>. The two taxa analysed here are native to the extreme shade of humid tropical forests: <i>S. willdenowii</i> (Desv.) Bak. in Southeast Asia and <i>S. uncinata</i> Spr. in South China. In both species blue iridescence develops on leaves in shade beneath foliage. The green leaves that develop in response to more direct sunlight do not become blue when subjected to this shade, but blue leaves gradually turn to green with age or exposure to more direct light (pers. observ.). The filtering action of the forest foliage produces</p>		

an environment deficient in energy for photosynthesis, with only 0.1-0.3% of the light above the canopy (Bjorkman and Ludlow, 1972; Bazzaz and Pickett, 1980).” (Hebant and Lee 1984: 216)

參考文獻清單與連結 (REFERENCE LIST)

Hebant, C. and D. W. Lee. (2006). Ultrastructural basis and developmental control of blue iridescence in *Selaginella* leaves. *American Journal of Botany* 71: 216-219.

(<https://doi.org/10.1002/j.1537-2197.1984.tb12506.x>)

Bjorkman, O. and M. M. Ludlow. (1972). Characterization of the light climate on the floor of a Queensland rainforest. *AGRIS* 1972: 85-94. (<https://agris.fao.org/agris-search/search.do?recordID=US201302231754>)

Bazzaz, F. A. and S. T. A. Pickett. (2003). Physiological ecology of tropical succession: a comparative review. *Annu. Rev. Ecol. Syst.* 11:287-310.

(<https://www.annualreviews.org/doi/10.1146/annurev.es.11.110180.001443>)

延伸閱讀

生物系統延伸資訊連結 (LEARN MORE ABOUT THE LIVING SYSTEM/S)

https://en.wikipedia.org/wiki/selaginella_willdenowii

https://www.onezoom.org/life/@selaginella_willdenowii

<https://eol.org/pages/595324>

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<https://asknature.org/strategy/leaves-change-colors-under-different-lighting/>