

Cypsela morphology and its significance for the taxonomic delimitation of the genus *Saussurea* DC. (s. str.) and its allied genera

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Abstract

Cypsela macro and micromorphological features of 28 taxa belonging to 7 genera namely *Saussurea* DC. s.str., *Lipschitzella* Kamelin, *Himalaiella* Raab-Straube, *Dolomiaea* DC, *Aucklandia* Falconer, *Frolovia* (DC.) Lipsch. and *Shangwua* Yu J. Wang of the tribe Cardueae (Asteraceae) were studied through light and scanning electron microscope to assess their taxonomic significance. Various cypsela features like pappus series, cypsela shape and surface patterns were found most significant characters for the taxonomic delimitation of *Saussurea* (s.l.). The genus *Saussurea* s.str. was delimited from its allied genera by having biseriate pappus. While, in remaining genera pappus were either uniseriate or multiseriate and among these genera, *Dolomiaea* was characterized due to multiseriate pappus. While, remaining genera such as, *Lipschitzella*, *Himalaiella*, *Aucklandia*, *Shangwua* and *Frolovia* had uniseriate pappus. Furthermore, these genera could be delimited on the basis of cypsela shape and surface patterns. Similar to the generic delimitation, cypsela micro and macromorphological characters were also found to be useful for specific delimitation within studied genera. Most of the cypsela morphological variables when analyzed numerically, also proved the taxonomic affiliation within all the taxa of the genus *Saussurea* and its allied genera. Similarly, these cypsela features could be well correlated with the gross morphological and molecular decisions at generic and partially for specific delimitation of *Saussurea* (s.l.) from Pakistan and Kashmir.

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