
Molecular phylogeography and intraspecific divergence of *Spiraea alpina* Pall. (Rosaceae) distributed in the Qinghai-Tibetan Plateau and adjacent regions inferred from nrDNA

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Résumé

The Qinghai-Tibetan plateau (QTP) uplift had a decisive effect on climatic and ecoenvironmental evolution in East Asia during the Quaternary. In the current study phylogeographic structure and diversification history of *Spiraea alpina* Pall. across the QTP were investigated for the first time, using the nuclear internal transcribed spacer (ITS) region. Data for ITS1-ITS4 were generated from a total of 284 individuals distributed within 31 natural populations. A clear phylogeographic structure was found for *S. alpina*. The results showed that this species colonized three different glacial refugia during the Quaternary extensive glaciation and expanded during the Interglacial period. Analysis of molecular variance (AMOVA) showed 74.13% genetic diversity among populations and 25.87% genetic variation within populations with distinct phylogeographic structure ($F_{ST} = 0.741^*$). The estimated divergence time revealed that the main lineages of *S. alpina* diversified during the Quaternary, 1.2-0.6 million years ago. The study concluded that severe climatic oscillations during the Quaternary and uplift of the QTP had a profound effect on the intraspecific divergence of *S. alpina*.

Mots-Clés: Genetic diversity Glacial refugia Allopatric divergence Phylogeography Qinghai, Tibetan plateau Speciation

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