Phylogeny and diversification of Valerianaceae (Dipsacales) in the southern Andes

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The southern Andean clade of Valeriana provides an excellent model for the study of biogeography. Here we provide new data to help clarify phylogenetic relationships among the South American valerians, with special focus on taxa found in the southern Andes. We found that the southern Andean taxa formed a clade in maximum likelihood and maximum parsimony analyses, and used a Bayesian relaxed clock method to estimate divergence times within Valerianaceae. Our temporal results were similar to other studies, but we found greater variance in our estimates, suggesting that the species of Valeriana have been on the South American continent for some time, and have been successful at exploiting new niche opportunities that reflects the contemporary radiation. Regardless of the time frame for the radiation of the clade, the uptick in the rate of diversification in Valerianaceae appears correlated with a dispersal event from Central to South America. The appearance of Valeriana in the southern An