**Introduction**

Part of the mint family Lamiaceae, the *Scutellaria* genus contains multiple species of plants renowned for their medicinal properties. *S. barbata* is commonly used in traditional Chinese and Korean medicine to treat swelling and inflammation, and multiple reports have recently been published describing its effectiveness in cancer treatments. *S. lateriflora* is used in traditional Native American treatments as a nerve tonic and sedative, with recent studies demonstrating its anticonvulsant and anxiolytic properties. Perhaps the most well-known species is *S. baicalensis* due to its extensive use in traditional Chinese, Japanese, and Korean remedies. More commonly called Huang Qin in Chinese medicine, the roots of *S. baicalensis* are prescribed to treat a variety of ailments, including edema, dysentery, pneumonia, jaundice, and more. In clinical studies, *S. baicalensis* root extracts have been found to exhibit neuroprotective, antibacterial, antitumor, antioxidant, and other beneficial health effects.

These beneficial effects can be largely attributed to the bioactive flavones which these *Scutellaria* species accumulate in high concentrations. 4’-hydroxyflavones, which include apigenin and its derivatives, have been isolated from multiple *Scutellaria* species, but are also widely distributed throughout multiple families in the plant kingdom. 4’-deoxyflavones however, which includes chrysin and its derivatives, have been proposed to be mostly specific to the *Scutellaria* genus. Only several species of plants outside of the *Scutellaria* genus have been found to be capable of synthesizing this class of flavones. The specific biological activities of the majority of both these classes of flavones have been studied. In addition, the accumulation patterns of these flavones have been characterized for several more well-known *Scutellaria* species, such as the previously mentioned *S. barbata*, *S. lateriflora*, and *S. baicalensis*.

For *S. baicalensis* specifically, the biosynthetic pathway responsible for flavone synthesis has been largely elucidated. Root and shoot-specific enzyme activities account for the organ-specific flavone profile of *S. baicalensis*. In this organ-specific profile, …

However, more than 470 species …

In this study …

**Results**

*Phylogenetic tree assembly*

**Discussion**

**Methods**

*Chloroplast genome sequencing*

*Phylogenetic tree construction*

*Growing conditions for fresh samples*

*HPLC extraction for herbarium and fresh samples*

*Hierarchical clustering of species and flavonoids*

*Flow cytometry to estimate genome sizes*

**References**