Morphological and chemical analyses of Eriocauli Flos sold in Taiwan markets

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ABSTRACT

Eriocauli Flos (Gujingcao; EF), the dried capitulum with the peduncle of Eriocaulon buergerianum Koern. (Eriocaulaceae), is a Chinese herbal medicine for treating eye diseases and inflammation. However, several species of the Eriocaulon genus are used as substitutes in different areas. To examine the species of EF used in Taiwan and to establish the quality control platform, morphological and chemical analyses have been performed. Ten major compounds, including apigenin (7) and its 7-O-β-D-glucopyranoside (1) and 7-O-(6-O-ε-coumaroyl)-β-D-glucopyranoside (6), hispidulin (8) and its 7-O-β-D-glucopyranoside (2) and 7-O-(6-O-ε-coumaroyl)-β-D-glucopyranoside (5), jaceosidin (9) and its 7-O-β-D-glucopyranoside (3), and toralactone (10) and its 9-O-β-D-glucopyranosyl(1→6)-β-D-glucopyranoside (4), were isolated and identified from commercially available EF. Morphological investigation showed that two kinds of EFs and most of the EFs sold in Taiwan herbal markets are capitulum without the peduncle. A simultaneous high performance liquid chromatography and ultra performance liquid chromatography analyses of multiple components (1–10) in commercially available EFs, collected from different areas of Taiwan, was conducted. Results showed wide variations in morphology and chemical profiles between capitulum with and without the peduncle. In comparison with an authentic E. buergerianum, we found not only the morphology but also the chemical profile was different from both collected samples. In terms of the morphological examination, the samples without peduncle are closer to the authentic one. To ensure the correct EF materia medica is used in Taiwan so as to guarantee their therapeutic efficacy in clinical practice, further monitoring is necessary.

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1. Introduction

Eriocauli Flos (Gu Jingcao; EF), the dried capitulum with peduncle of Eriocaulon buergerianum Koern. (Eriocaulaceae) as Taiwan Herbal Pharmacopeia and China Pharmacopeia [1,2], has been used for treating eye diseases and inflammation, and processed in combination with other herbs as beverages for eye protection, reducing lipids in the blood, and making nutritious soups [3–5]. However, several species of the Eriocaulon genus, such as Eriocaulon sexangulare, E. austral, and E. cinereum have been used as the substitutes of EF in different areas of China [6,7]. They are not easily differentiated by

![Figure 1 - Microscopic observation of commercially available Eriocauli Flos. (B–K) collected from herbal retailers in different areas of Taiwan and (A) an authentic Eriocauli Flos.](image-url)
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