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Discovery of quality control ingredients in burdock root by combining anti-tumor effects and UHPLC-QqQ-MS/MS

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Abstract

Burdock root is the root of *Arctium lappa* L., a plant of the Compositae family, which has the effects of dispersing wind and heat, detoxifying and reducing swelling. In order to better control the quality of burdock root, a screening study of quality control indicators was carried out. The current research combines biological activity evaluation with chemical analysis to screen and identify the biologically active compounds of burdock root as chemical components for the quality control of herbal medicine. The efficacy of 10 batches of ethanol extracts of burdock roots was evaluated by a tumor inhibition experiment in S180 tumor-bearing mice. The five main chemical components of these extracts were simultaneously quantitatively measured by ultra-high performance liquid chromatography combined with triple quadrupole mass spectrometry. Pearson correlation analysis was used to establish the relationship between these extracts' biological activity and chemical properties. The results showed that chlorogenic acid, caffeic acid and cynarin were positively correlated with the effect of inhibiting tumor growth, and further bioassays confirmed this conclusion. In conclusion, chlorogenic acid, caffeic acid and cynarin can be used as quality control markers for burdock root's antitumor effect.

Keywords: UHPLC-QqQ-MS/MS; antitumor; burdock root; quality markers.

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