

In Vitro Scolicidal Effects of *Sideritis perfoliata* Aerial Part Extract against the Protoscoleces of *Echinococcus granulosus*

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Abstract

Background: Cystic echinococcosis (CE) is commonly located in the liver and lungs of affected hosts. Surgical management is one of the best choices for the treatment of hydatidosis and using effective scolicidal agents during hydatid surgery is essential to prevent secondary infection. The present study was designed to investigate the in vitro scolicidal activity of methanol extract of *Sideritis perfoliata* against the protoscoleces of hydatid cysts. Methods: The protoscoleces were collected from slaughtered livestock in Adiyaman and the effect of three concentrations of the aerial part extract of *S. perfoliata* (0.1mg/ml, 0.2mg/ml, and 0.4mg/ml) was assessed over three different exposure periods. All tests were carried in duplicate. Finally, the mortality of protoscoleces was assessed by the eosin exclusion test (0.1% eosin staining). Methanol extract of *S. perfoliata* was assessed by Liquid Chromatography-Mass Spectrometry/Mass Spectrometry (LC-MS/MS). Results: The results showed that the scolicidal effect of this extract at exposure periods of 10, 20, and 30 min was 29.6, 32.5, and 43.6% at concentrations of 0.1mg/ml, 37.8, 50, and 58.1% at concentration of 0.2mg/ml and finally 57.9, 71.8, and 79.1% at concentration of 0.4mg/ml, respectively; indicating that the extract requiring a further time to display a potent protoscolicidal effects. Some phenolic acids such as fumaric acid (260,13mg/L), syringic acid (27,92mg/L) and caffeic acid (26,84mg/L) and a flavonoid, luteolin (11,23 mg/L) were detected in high concentrations. Conclusions: The present study has demonstrated that the methanol extract of *S. perfoliata* has high scolicidal power in vitro, although the low concentration of plant extract may provide a base for future treatment of hydatid cysts. However, more research on the in vivo efficacy of *S. perfoliata* extract and its potential side effects is recommended.

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