Cytotoxic Activity of Sesquiterpenoids from Atractylodes ovata on Leukemia cell lines

王靜瓊;楊玲玲
Wang CC;Chen LG;Yang LL

Abstract

The rhizome of Atractylodes ovata (Bai Zhu in Chinese) is a widely used traditional Chinese herb in Taiwan as a tonic agent. In this paper, four sesquiterpenoids, namely atractylon, and atractylenolides I, II, and III, were isolated from the n-hexane extract of A. ovata and were evaluated for cytotoxic effects in vitro. Atractylon significantly inhibited the growth of human leukemia cell line HL-60 and mouse leukemia cell line P-388, and showed low cytotoxicity against primary cultures of normal human peripheral blood mononuclear cells at 15 microg/ml for 12 h. Atractylon had a dose-dependent antiproliferative effect on the two tumor cell lines. In accordance with DNA fragment increases and PARP protein decreases, atractylon at 15 microg/ml for 6 h induced apoptosis in HL-60 cells. Moreover, atractylon inhibited the viability of P-388 cells and induced apoptosis after 15 microg/ml treatment for 12 h in an in vitro assay. However, atractylenolide I at 30 microg/ml for 12 h also induced apoptosis in HL-60 and P-388 cells, but atractylenolides II and III showed no significant inhibition effects on tumor cell growth. As the above results suggested, atractylon and atractylenolide I were the major cytotoxic principle constituents of A. ovata on leukemia cell lines.