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Two matrix metalloproteinases inhibitors from *Ferula persica* var. *persica*Shahverdi, A.R.^a, Saadat, F.^b, Khorramizadeh, M.R.^b, Iranshahi, M.^c, Khoshayand, M.R.^d^a Department of Pharmaceutical Biotechnology, Medicinal Plant Research Center, Faculty of Pharmacy, Tehran, Iran^b Department of Pathobiology, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran^c Department of Pharmacognosy, Faculty of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran^d Department of Drug and Food Control, Faculty of Pharmacy, Tehran University of Medical Sciences, Tehran, Iran

Abstract

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Matrix metalloproteinases (MMPs) play a role in several physiologic and pathologic events. There is some evidence indicating the involvement of MMPs in tumor invasion and inflammatory diseases. Here we studied the chloroform extract of *Ferula persica* var. *persica*. The influence of these extracts vs. a reference drug, diclofenac sodium, on MMP production by the fibrosarcoma cell line was investigated using an in vitro cytotoxicity assay, sodium dodecyl sulfate-polyacrylamide, and gelatin zymography. The total extract of the roots was found to exhibit a selective inhibitory effect on tumor cell invasion. The bioactivity-guided fractionation of this extract led to the isolation of two compounds. These compounds showed highest MMP inhibitory effect at minimal toxic dose levels. Using conventional spectroscopy methods, the active fractions were identified as t-butyl 3-[(1-methylthiopropyl)dithio]-2-propenyl malonate (persicasulphide B) and umbelliprenin, previously isolated from *F. persica* var. *latisecta*. Since inhibition of MMP activity has been employed in modality therapy in diseases such as cancer, this compound might be promising in the preparation of anti-MMP therapeutic derivatives. © 2006 Elsevier GmbH. All rights reserved.

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Author keywords

Cytotoxicity; *Ferula persica*; Matrix metalloproteinase; Persicasulphide B; Umbelliprenin; Zymoanalysis

Indexed Keywords

EMTREE drug terms: badrakemone; diclofenac; farnesiferol a; *Ferula persica* extract; gelatin; gummosin; matrix metalloproteinase; matrix metalloproteinase inhibitor; persicasulphide a; persicasulphide b; plant extract; umbelliprenin; unclassified drugEMTREE medical terms: animal cell; article; cancer cell culture; cancer inhibition; cancer invasion; concentration response; controlled study; cytotoxicity test; drug structure; enzyme activity; enzyme inhibition; enzyme synthesis; fennel; *Ferula persica*; fibrosarcoma; mouse; nonhuman; plant root; polyacrylamide gel electrophoresis; priority journal; spectroscopy; zymographyMeSH: Animals; Antineoplastic Agents; Cell Line, Tumor; *Ferula*; Malonates; Matrix Metalloproteinases; Mice; Plant Extracts; Plant Roots; Umbelliferones

Medline is the source for the MeSH terms of this document.

Species Index: *Ferula persica*

Chemicals and CAS Registry Numbers: diclofenac, 15307-79-6, 15307-86-5; gelatin, 9000-70-8; umbelliprenin, 23838-17-7; Antineoplastic Agents; Malonates; Matrix Metalloproteinases, EC 3.4.24.-; persicasulphide B; Plant Extracts; Umbelliferones; umbelliprenin, 532-16-1

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