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Two matrix metalloproteinases inhibitors from Ferula persica var. persica

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Abstract

View references (11)

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.

Reaxys Database Information

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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 drug

EMTREE 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; zymography

MeSH: 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.-; persicasulfide B; Plant Extracts; Umbelliferones; umbelliprenin, 532-16-1

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