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Antiproliferative activity of gaillardin against six cell lines.

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Background and Aims: Sesquiterpene lactones exist in various genera of Asteraceae family. Many of these compounds possess biologic and more emphasized here, antiproliferative activity. Examples include, Isocostunolide from Inula helenium and1-O-acetylbritannilactone and 1,6-O,O-diacetylbritannilactone from Inula Britannica. In our study, Inula oculus-christi L. (Asteraceae) extract which had showed to be cytotoxic in previous studies, was chromatographed and the isolated compound was evaluated for cytotoxic activity.
Methods: Chromatographic separation of the chloroform soluble extract of Inula oculus-christi led to the isolation of sesquiterpene lactone gaillardin. The structure of gaillardin was determined according to the NMR, IR, Mass and X-ray crystallographic data and it was further investigated for cytotoxic activity on MCF7(human breast adenocarcinoma), WEHI164 (mouse fibrosarcoma) HepG2 (hepatocellular carcinoma), MDBK (bovine kidney cells) HT29 (human colon adenocarcinoma) and A549 (non-small cell line carcinoma) cells through MTT assay.
Results: IC50 values of gaillardin on the above mentioned cell lines were 8, 15.28, 6.2,11, 1.81 and 4.76 µg/ml respectively. Tamoxifen was used as the positive control and solvent (DMSO 1%) was the negative control.
Conclusions: According to the results of MTT assay, the antiproliferative activity of the Inula oculus-christi extract could be partly related to the presence of gaillardin in the chloroform soluble fraction of the plant.

Keywords: Gaillardin; Inula oculus-christi; MTT assay; Asteraceae