

In vitro Antitumor Activity of Orsellinates

Danielle Bogo^a, Maria de Fátima Cepa Matos^{a,*}, Neli Kika Honda^b,
Elenir Curi Pontes^c, Patricia Midori Oguma^a, Evelyn Cristina da Silva Santos^a,
João Ernesto de Carvalho^d, and Auro Nomizo^c

^a Laboratório de Biologia Molecular e Culturas Celulares, Departamento de Farmácia – Bioquímica, Universidade Federal de Mato Grosso do Sul (UFMS), Caixa Postal 549, Campo Grande, MS 79070-900, Brazil. Fax: +55-67-33 87-20 97.

E-mail: mfcmatos@nin.ufms.br

^b Departamento de Química, UFMS, Campo Grande, MS, Brazil

^c Departamento de Tecnologia de Alimentos e Saúde Pública, UFMS, Campo Grande, MS, Brazil

^d Centro Pluridisciplinar de Pesquisas Químicas, Biológicas e Agrícolas, Universidade Estadual de Campinas (Unicamp), Caixa Postal 6171, Campinas, SP 13081-970, Brazil

^e Faculdade de Ciências Farmacêuticas de Ribeirão Preto, Departamento de Análises Clínicas, Toxicológicas e Bromatológicas, Universidade de São Paulo (USP), Avenida Professor Zeferino Vaz, s/n., Ribeirão Preto, SP 14040-903, Brazil

* Author for correspondence and reprint requests

Z. Naturforsch. **65c**, 43–48 (2010); received July 22/September 3, 2009

Lichen phenolic compounds exhibit antioxidant, antimicrobial, antiproliferative, and cytotoxic activities. The purpose of this study was to evaluate the anticancer activity of lecanoric acid, a secondary metabolite of the lichen *Parmotrema tinctorum*, and its derivatives, orsellinates, obtained by structural modification. A cytotoxicity assay was carried out *in vitro* with sulforhodamine B (SRB) using HEP-2 larynx carcinoma, MCF7 breast carcinoma, 786-0 kidney carcinoma, and B16-F10 murine melanoma cell lines, in addition to a normal (Vero) cell line in order to calculate the selectivity index of the compounds.

n-Butyl orsellinate was the most active compound, with IC₅₀ values (the concentration that inhibits 50% of growth) ranging from 7.2 to 14.0 µg/mL, against all the cell lines tested. The compound was more active (IC₅₀ = 11.4 µg/mL) against B16-F10 cells than was cisplatin (12.5 µg/mL). Conversely, lecanoric acid and methyl orsellinate were less active against all cell lines, having an IC₅₀ value higher than 50 µg/mL. Ethyl orsellinate was more active against HEP-2 than against MCF7, 786-0, or B16-F10 cells. The same pattern was observed for *n*-propyl and *n*-butyl orsellinates. *n*-Pentyl orsellinate was less active than *n*-propyl or *n*-butyl orsellinates against HEP-2 cells. The orsellinate activity increased with chain elongation (from methyl to *n*-butyl), a likely consequence of an increase in lipophilicity. The results revealed that the structural modification of lecanoric acid increases the cytotoxic activity of the derivatives tested.

Key words: Orsellinates, Lecanoric Acid, Cytotoxic Activity