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Anti-tumoral activity of lipophilic Eucalyptus bark extracts, enriched on triterpenic acids, against breast cancer cells

A Guerra [1,2], B Soares [2], O Guerreiro [1,3], P Ramos [1,2], H Oliveira [4], A Silvestre [2], C Freire [2], MF Duarte [1]

- [1]Centro de Biotecnologia Agrícola e Agro-Alimentar do Alentejo (CEBAL)/Instituto Politécnico de Beja (IPBeja), 7801 – 908 Beja, Portugal
- [2]CICECO & Department of Chemistry, University of Aveiro, Campus de Santiago, 3810 – 193 Aveiro, Portugal
- [3]CIISA, Centro de Investigação Interdisciplinar em Saúde Animal, Faculdade de Medicina Veterinária, Pólo Universitário do Alto da Ajuda, 1300 – 477 Lisboa, Portugal
- [4]CESAM & Department of Biology, Laboratory of Biotechnology and Cytometry, University of Aveiro, 3810 – 193 Aveiro, Portugal

The agro-industrial exploitation of eucalyptus for pulp production generates large amounts of biomass residues, particularly bark. *Eucalyptus* spp. is the most important fiber source for pulp and paper production in southwestern Europe [1].

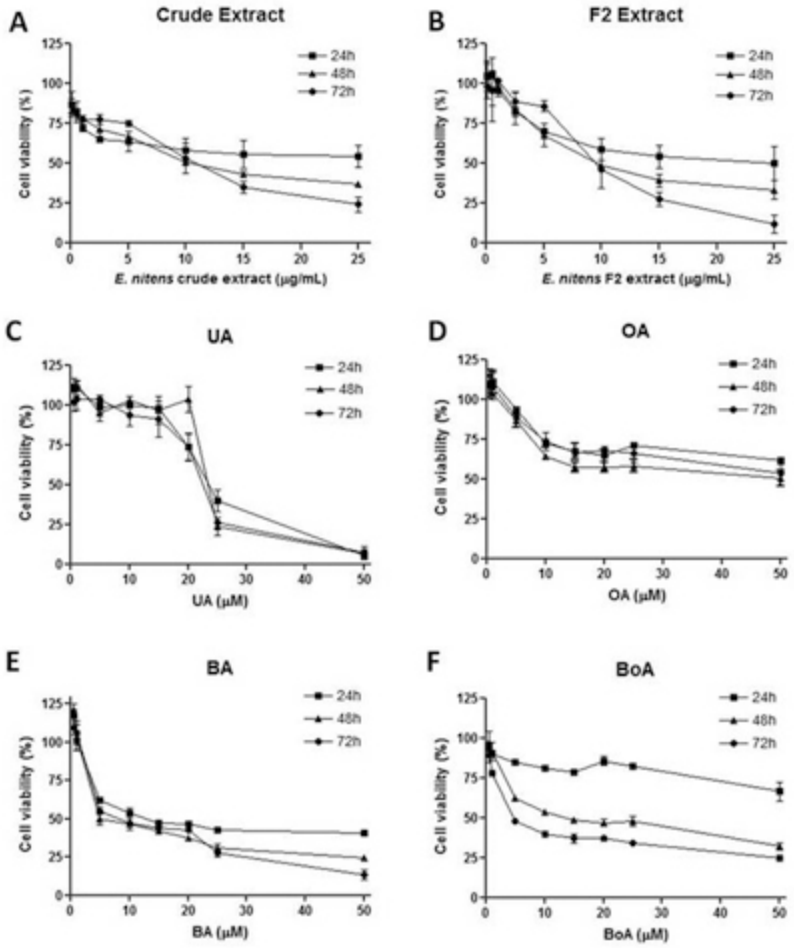

Fig. 1: Antiproliferative effect of *Eucalyptus ritens* Crude, F2 extracts and triterpenic acids on human breast cancer cells. Dose-response curves of *E. nitens* Crude (A) and F2 (B) extracts and UA (C), OA (D), BA (E) and BoA (F) treatment in MDA-MB-231 cells.

Eucalyptus spp. barks are an abundant source of several triterpenoids, mostly triterpenic acids (TAs), namely betulinic (BA), oleanolic (OA), ursolic (UA) and betulonic (BOA) acids [2]. These pentacyclic triterpenes have a broad spectrum of biological activities, being some of them considered promising anticancer drugs [3]. Therefore, the present work aims to characterize the anti-tumoral activity of pure TAs (UA, OA, BA and BOA) as well as total and fractionated (enriched on different TAs) *Eucalyptus nitens* outer bark derived extracts, in a breast cancer in vitro cell model. The crude and fractionated *E. nitens* outer bark extracts were previously chemically characterized [2]. Crude and Fractionated (F2) extracts inhibited the proliferation of MDA-MB-231 cells in a dose- and time-dependent manner. Treatment of MDA-MB-231 cells with crude and F2 extracts resulted in a significant reduction in cell migration, as compared to vehicle control. Cell cycle analysis was also assessed by flow cytometry. Since the phosphatidylinositol 3-kinase(PI3K)/Akt is the signalling pathway frequently implicated in oncogenic transformation in breast cancer, the phosphor-Akt protein levels were also determined. Taken together, our study suggests potential therapeutic effect of *Eucalyptus* spp. bark extracts against an aggressive breast cancer cell model.

References:

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