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Investigating the cell growth inhibitory effect of an aqueous extract from *Achillea millefolium* L. in human tumor cell lines

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The traditional use of plants in folk medicine has contributed to increase their significance in the pharmaceutical field. *Achillea millefolium* L., also known as yarrow, is a traditional medicinal plant that can be found in several regions of Europe, Asia, North Africa and North America. Yarrow has antitumor, antimicrobial, anti-inflammatory and antioxidant properties. Indeed, several studies indicated that this plant has antioxidant potential due to its chemical composition in phenolic acids and flavones. The aim of this project was to: (1) evaluate the cell growth inhibitory activity of the aqueous extract of *A. millefolium* in two different human tumor cell lines, non-small cell lung cancer (NCI-H460) and human colorectal adenocarcinoma (HCT-15); and (2) investigate the mechanism of action of the extract in those cell lines. Cell growth was evaluated with the sulforhodamine B assay. Cell cycle and apoptosis were analyzed by flow cytometry following incubation with propidium iodide (PI) or Annexin V FITC/PI, respectively. The expression of proteins involved in cell cycle and apoptosis was studied by Western blot. Results indicated that the aqueous extract of *A. millefolium* inhibited the growth of both cell lines. In addition, treatment with this extract induced alterations in the cell cycle profile and increased the levels of apoptosis, in both cell lines. Moreover, the extract decreased the expression of total PARP and increased the expression of p21 and p2AX. This work highlights the significance of *A. millefolium* as a source of bioactive compounds with tumor cell growth inhibitory potential.

Biography

Joana Pereira obtained an Integrated Master's degree in Pharmaceutical Sciences from the Faculty of Pharmacy, University of Porto (FFUP). During her undergraduate studies, she worked in the Department of Biological Sciences of FFUP, initially as a student and subsequently as a volunteer training student. She has studied the antitumor potential of various plant extracts. Currently, she is a Visiting Researcher of the Cancer Drug Resistance group of i3S/IPATIMUP and her research interests consist of understanding the antitumor activity of compounds and the molecular pathways involved in cancer drug resistance.

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