



2nd Symposium on **Medicinal Chemistry** of University of Minho

8 May 2015

SCHOOL OF SCIENCE, CHEMISTRY DEPARTMENT

Campus de Gualtar

Effects of extraction solvent and samples origin in the antitumor and antimicrobial activity of *Laurus nobilis* L. leaves

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Laurus nobilis L., commonly known as laurel, belongs to Lauraceae family and it's a native plant from the Mediterranean region. It is mostly appreciated for its flavour as a culinary spice, being also consumed as infusion to treat some gastrointestinal problems [1]. It has been reported as a rich source of bioactive molecules, such as phenolic compounds and essential oils [2,3]. Due to the exponential increase of oncological diseases and also the increased resistance to antibiotics, there is a growing concern in seeking new sources of antitumors and antimicrobials, being natural matrices such as plants promising sources.

Herein, *in vitro* antitumor (against five different human tumor cell lines) and antimicrobial (antibacterial and antifungal) activities were evaluated on methanolic and aqueous extracts of wild and cultivated *L. nobilis* leaves. Furthermore, to understand how both bioactive extracts and the origin of laurel sample act differentially towards specific bacterial and fungal species and also selected human tumor cell lines, a statistics analysis was performed using two-dimensional principal component analysis (PCA).

The origin (wild or cultivated) and extract type (methanolic or aqueous) of laurel samples act in a different manner for the same evaluated parameter, showing statistically significant differences in the origin, but not in the extract studied, or vice-versa. It was the extract type who showed most significant changes in the bioactivities studied in both laurel samples. From the PCA biplot, it became clear that wild samples were more effective to inhibit tumor cell lines growth, especially HeLa, MCF7, NCI-H460 and HCT15. It was also observed that methanolic extracts tended to have higher antimicrobial activity, except for *Aspergillus niger*, *Aspergillus fumigatus* and *Penicillium verrucosum*. The differences in bioactivity might be related to the higher phenolic compounds content (flavonols, flavones and even, total phenolic compounds) found in the methanolic extracts.

From the results obtained it is interesting to find out that considering the origin of laurel, wild or cultivated, it was possible to specify the bioactivity of the extract, methanolic or aqueous. Meaning, from the PCA biplot it is possible to choose the combination extract type/origin with potentially highest antitumor or antimicrobial effect, depending on the objective of the study.

Acknowledgments:

FCT for financial support to CIMO (strategic project PEst-OE/AGR/UI0690/2014), REQIMTE (PEst-C/EQB/LA0006/2014), M.I. Dias (SFRH/BD/84485/2012), R.C. Calhela (SFRH/BPD/68344/2010) and J.C.M. Barreira (BPD/72802/2010).

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