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Phenolic compounds and bioactive properties of wild German and Roman chamomiles

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Natural products represent a rich source of biologically active compounds and are an example of molecular diversity, with recognized potential in drug discovery. In the present work, the methanolic extract of *Matricaria recutita* L. (German chamomile) and *Chamaemelum nobile* L. (Roman chamomile) and their decoction and infusion (the most consumed preparations of these herbs) were submitted to an analysis of phenolic compounds and bioactivity evaluation. Phenolic compounds were characterized by HPLC-DAD/ESI-MS. The bioactivity of the samples was tested in human tumour cell lines (breast- MCF-7, lung- NCI-H460, colon- HCT-15, cervical- HeLa and hepatocellular- HepG2 carcinomas), and the hepatotoxicity was evaluated using a porcine liver primary cell culture (non-tumour cells, PLP2).[1,2]

Methanolic extracts of both chamomiles presented the highest amount of phenolic compounds varying in their composition. Furthermore, it was observed a decrease in the amount of phenolic compounds in decoction preparations of both samples. The major compounds found were luteolin *O*-acylhexoside in German chamomile, and 5-*O*-caffeoylquinic acid and an apigenin derivative in Roman chamomile. Methanolic extract and infusion preparation of both herbs showed inhibitory activity of the growth of HCT-15 and HeLa cell lines, without hepatotoxicity (GI_{50}>400 μg/mL). Nevertheless, Roman chamomile methanolic extract presented the highest inhibitory activity for all the cell lines (GI_{50}<168 μg/mL). Decoction of both herbs did not show inhibitory activity of the growth of none of the tested cell lines (GI_{50}>400 μg/mL), which could indicate that this bioactivity might be related to compounds (including phenolic compounds) that were not extracted or that were affected by the decoction procedure.

Overall, both chamomiles, mainly the methanolic extracts, contain important phytochemicals with bioactive properties to be explored in the medicine, food, and cosmetic industries.

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