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Título artículo: Comparison of the phenolic composition and biological capacities of wastewater from *Origanum vulgare* L., *Rosmarinus officinalis* L., *Salvia lavandulifolia* Vahl. and *Thymus mastichina* L. resulting from two hydrodistillation systems: Clevenger and MAE

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RESUMEN: Essential oils (EO) are probably the most marketable product obtained from medicinal plants and have an important demand in different sectors such as food industry, pharmaceuticals, cosmetics or perfumery. However, during EO distillation a large volume of waste is generated including solid residues, hydrolates and wastewater. Wastewater (WW) is mostly generated during hydrodistillation by a conventional Clevenger apparatus (CA) although during the last years a more innovative Microwave-assisted Extraction (MAE) system has increasingly been used. Regardless the system of hydrodistillation, wastewater is a residue from aromatic plants often neglected. In this work, we have compared the phenolic content and composition, extraction yield and some biological activities (antioxidant, antifungal, effects on seed germination/growth and acetylcholinesterase/AChE inhibition) of the wastewater resulting from the hydrodistillation of *Origanum vulgare*, *Rosmarinus officinalis*, *Salvia lavandulifolia* and *Thymus mastichina* obtained by a traditional Clevenger apparatus (CA) and the alternative Microwave-assisted Extraction System (MAE). The results showed a high content of phenols in all WWs, being the most important the danshensu, rosmarinic acid, as well as different isomers of salvianolic and yunnaneic acid or luteolin glycosides. However, the contents on many of these phenols ranged widely among WWs which seemed to influence the biological activities. Overall, wastewaters were especially active as antioxidants and chelators while the results in other bioactivities were rather uneven and depended in some cases on the distillation system. Consequently, the choice of the distillation method is crucial on the composition of the resulting residues and their biological activities, and therefore determines the feasibility and potential of valorization of this residue.

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