

## Valorization of residual extract of hydro- distillation process for obtaining silver nanoparticles: Potentialities as antimicrobial agent against *Xanthomonas axonopodis pv. phaseoli*.

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The synthesis of metallic nanoparticles (MNP) using noble metals such as silver, has become a practice used to obtain promising nanostructures for different purposes (industrial, biomedical, agriculture, etc.), because they have optical, electrical, magnetic and thermal properties, that confer them behaviors and biological activities, in some cases, different to the individual systems that compose them. Numerous studies have shown their antimicrobial properties. The synthesis of silver nanoparticles (SNP) from plants constitutes a simple, fast and environmentally safe route. Numerous plant species have been reported with positive results for this purpose. In the present work, the residual aqueous extract of the hydrodistillation process of the essential oil from *Thymus vulgaris* L. was evaluated as a possible source of reducing and stabilizing agents to obtain SNP, as well as the start of the evaluation of the antimicrobial activity against *Xanthomonas axonopodis pv. phaseoli*. Preliminary results showed that the evaluated extract is promise for the green synthesis of SNP, also it showed antimicrobial activity similar to other silver ionic form and superior to the copper forms evaluated as positive control, which suggests the need for the continuation of the physical-chemical characterization studies and biological evaluations that will make possible the use of this abundant residual.

Key words: Silver nanoparticles, *Thymus vulgaris*, *Xanthomonas axonopodis pv. phaseoli*, antibacterial activity, valorization, aqueous residual