

TITLE: ANTI-*HELICOBACTER PYLORI* ACTIVITY OF SILVER COORDINATION COMPOUNDS

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ABSTRACT

Helicobacter pylori is a important bacteria in the gastritis environment. Is classified as one bacteria involved in persistent gastric mucosal infections, such as gastritis, peptic and duodenal ulcers, and is considered a factor risk of gastric adenocarcinoma and gastric lymphoma associated with lymphoid tissue (MALT). The eradication of *H. pylori* contributes to the treatment and prevention of these gastroduodenal diseases. However, the relation between *H. pylori* and acquired resistance to the various drugs in the clinical. In this sense, the search of new compound as silver is an alternative for antimicrobial activity. Additionally, this compounds can be complexed, allowing adjustments in the antimicrobial property through the chemical binders coordinated to the metal ion. This work aimed to evaluate the activity of unloaded and loaded silver (I) coordination compounds: Ag(PCAHTSC)₂]NO₃ (1), [AgCl(PCAPhTSC)₂] (2) e [AgCl(PCAHTSC)₂] (3) in the drug delivery system (polymeric nanoparticle) against *H. pylori*. The polymeric nanoparticle was created by nanoprecipitation with composition of poloxamer 407 (surfactant), polymer (polycaprolactone) and an aqueous phase (phosphate buffered pH 7.4). The characterization was performed by determining of diameter mean, polydispersity index (PDI) and zeta potential (ZP). The loaded compounds showed adequate size, homogeneity and negative charge. The minimal inhibitory concentration (MIC) was determined by microdilution assay according to the protocol described by CLSI with adaptations for fastidious bacteria. Compound 1 showed MIC values of 7.81 µg mL⁻¹ (unloaded) and 12.50 µg mL⁻¹ (loaded). Compound 2 showed MIC values of 3.90 µg mL⁻¹ (unloaded) and 0.39 µg mL⁻¹ (loaded). Compound 3 inhibited *H. pylori* with MIC of 7.81 µg mL⁻¹ (unloaded) and 6.25 µg mL⁻¹ (loaded). The results concluded that the use of nanotechnology improves the biological activity of Ag (I) coordination compounds against *H. pylori*. This study brings important results of silver coordination compounds that can be a new alternative in the *H. pylori* control.

Keywords: *Helicobacter pylori*; silver coordination compounds; polymeric nanoparticle; drug-resistant; microdilution

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