



## ***In vitro* antimicrobial effects of clarithromycin loaded PLGA nanoparticles against clinical strains of *Helicobacter pylori***

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**Background and Aims:** The aim of this research was to prepare and evaluate antimicrobial activity of clarithromycin loaded PLGA nanoparticles against clinical strains of *Helicobacter pylori* in order to improve patient compliance by improving its therapeutic effect and reducing its dose-related side effects.

**Methods:** The clarithromycin nanoparticles were prepared by the Quasi Emulsion Solvent Diffusion (QESD) method using Ploxamer188® as a stabilizing agent and Poly lactic-co-Glycolic Acid (PLGA) as a biodegradable polymer. In vitro antibacterial activity of the formulations was performed against clinical strains of *Helicobacter pylori* by using agar dilution method and incubating cultures in gas-generating pack.

**Results:** Clarithromycin loaded PLGA nanoparticles in the size range between 189 and 280 nm; a relatively monodisperse distribution and spherical shape were achieved. The maximum percentage of drug entrapment for clarithromycin was 80%, whereas the maximum percentage for yield of the system was 90%. In vitro antibacterial activity of the formulations showed greater eradication effect of clarithromycin in the form of nanoparticle in comparison with the untreated clarithromycin.

**Conclusions:** The prepared clarithromycin nanoparticles are more potent against *H.pylori* with improved MICs and appropriate physicochemical properties that may be useful for other susceptible microorganisms and could be a suitable candidate for intravenous and oral preparations.

**Keywords:** Clarithromycin; Nanoparticle; *Helicobacter pylori*; Agar dilution