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DISSERTATION

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THEME

**The Antimicrobial Resistance of
Helicobacter pylori in Africa**

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Abstract

Helicobacter pylori is emerging as the most currently threatening bacteria that causes severe problems to the health of individuals worldwide in particular living in an undeveloped environment like Africa. Currently it has shown great resistance to the antibiotics that are used to fight it whereby the first and second line treatment, which includes a combination of a proton pump inhibitor, and antibiotics have failed to fight this threatening bacterium. So, scientific researchers have developed an improved technique such as novel therapeutic strategies which include the use of Nanoparticles, phages and natural products to fight this challenging bacterium. The use of these novel therapeutic strategies have led to a great hope for the biological world in eradicating this bacterium as they obtain positive results in eradicating it.

Key words: *Helicobacter pylori*, Antibiotics, Antibiotic resistance, Proton pump inhibitor, Novel therapeutic strategies, Nanoparticles, Phages, Natural product.

Résumé

Helicobacter pylori émerge comme la bactérie la plus menaçante actuellement, causant de graves problèmes de santé aux individus à travers le monde, en particulier dans les environnements sous-développés comme en Afrique. Actuellement, HP a montré une grande résistance aux antibiotiques utilisés pour la combattre, et les traitements de première et de deuxième ligne, qui comprenant une combinaison d'un inhibiteur de la pompe à protons et d'antibiotiques, ont échoué à éliminer cette bactérie menaçante. Ainsi, les chercheurs scientifiques ont développé des techniques améliorées, notamment des stratégies thérapeutiques novatrices qui incluent l'utilisation de nanoparticules, de bactériophages et de produits naturels pour lutter contre cette bactérie difficile. L'utilisation de ces stratégies thérapeutiques novatrices offre un grand espoir au monde biologique dans l'éradication de cette bactérie, car elles montrent des résultats positifs.

Mots-clés : *Helicobacter pylori*, antibiotiques, résistance aux antibiotiques, inhibiteur de la pompe à protons, stratégies thérapeutiques novatrices, nanoparticules, bactériophages, produit naturel.

الملخص

تُعَدُّ *Helicobacter pylori* من أكثر البكتيريا تهديدًا في الوقت الحالي، إذ تسبب مشاكل صحية خطيرة على مستوى العالم، خاصة في البيئات المتخلفة مثل إفريقيا. وقد أظهرت هذه البكتيريا مقاومة كبيرة للمضادات الحيوية المستخدمة في مكافحتها، حيث فشلت العلاجات من الخط الأول والثاني، التي تعتمد على الجمع بين مثبطات مضخة البروتون والمضادات الحيوية، في القضاء عليها. لذلك، قام الباحثون العلميون بتطوير تقنيات علاجية محسّنة، تضمنت استراتيجيات علاجية مبتكرة تشمل استخدام الجسيمات النانوية، والبكتريوفاجات، والمنتجات الطبيعية لمحاربة هذه البكتيريا المقاومة. وتُعطي هذه الاستراتيجيات العلاجية الحديثة أملًا كبيرًا في المجال البيولوجي للقضاء على هذه البكتيريا، نظرًا للنتائج الإيجابية التي أظهرتها.

الكلمات المفتاحية : *Helicobacter pylori* ، مضادات حيوية، مقاومة المضادات الحيوية، مثبط مضخة البروتون، استراتيجيات علاجية مبتكرة، جسيمات نانوية، بكتريوفاجات، منتجات طبيعية