Nitazoxanide Based Therapeutic Regimens: Will this Solve the Puzzle of Increasing Resistance of *Helicobacter pylori* to Conventional Treatment?

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A tiny, Gram-negative sprochete called *Helicobacter pylori (H pylori)* lives in the mucus layer that protects the stomach's epithelial cells in humans. A 50% of the world's population has this prevalent bacterial infection [8]. Additionally; it is the leading global cause of gastritis [3]. Additionally, *H. pylori* is a type 1 carcinogen and is the primary cause of stomach cancer, lymphoma, and mucus associated lymphatic tissue lymphoma (MALT), according to the World Health Organization [6] .

The recommended treatment for *H. pylori* is the current traditional triple therapy, which includes proton pump inhibitors (PPI), amoxicillin, and clarithromycin. This is the accepted worldwide standard for treating H. pylori infection[3]. In instances of allergies or resistance, metronidazole is used in place of amoxicillin or clarithromycin[11].However, a research by Gisbert et al. (2000) revealed that 30% of patients on intention to treat (ITT) and up to 50% of patients treated with a PPI-based triple therapy with metronidazole would fail treatment with a triple-based PPI treatment and first line therapy .[5]

This problem of treatment resistance calls for further research into alternative medications [10]. Due to emerging antibiotic resistance and poor patient compliance with finishing the treatment cycle, which lowers *H. pylori* elimination rates, *H. pylori* infection has grown extremely resistant to conventional first-line treatment regimens. As a result, there is a lot of interest in evaluating novel antibiotic combinations and therapy plans for *H. pylori* [4].

The antibiotic nitazoxanide (NTZ), which has been stabilised as a treatment, has microbiological properties that are comparable to those of metronidazole. It has a broad spectrum of action against microbial and anaerobic bacteria, anaerobic protozoa, and parasitic worms [1]. It is said to be helpful in treating parasitic infections of the intestines, particularly those caused by protozoa and parasitic worms [7], and was investigated as an additional therapy for chronic hepatitis C virus along with pegylated Interferon and ribavirin. Additionally, it provided early proof that the drug was effective in treating chronic hepatitis B virus (HBV) after just one round of medication [2].

Inhibition of lipid polysaccharide (LS) caused by the production of pro-inflammatory cytokines in macrophages are additional noteworthy immune properties of nitazoxanide [9].

When NTZ and omeprazole were combined (1 g of NTZ twice daily with 20 milligrammes of omeprazole once daily) for seven days, 91 patients experienced an 83% eradication rate. Despite in vivo exposure during therapy and prolonged in vitro

exposure of *H. pylori* strains to NTZ, resistance could not be seen[2,7].

All this points to the importance of further research on nitazoxanide based treatment regimens as novel regimens for *Helicobacter pylori* eradication as this may solve the puzzle of increasing resistance of *Helicobacter pylori* to conventional treatment.

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